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PLANNING POSTWAR SCHOOL BUILDINGS

Proceedings

Bureau of Cooperative Research and Field Service
School of Education
Indiana University, Bloomington, Indiana

HENRY LESTER SMITH, Director
MERRILL T. EATON, Assistant Director

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INDIANA UNIVERSITY

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Published by the
BUREAU OF COOPERATIVE RESEARCH AND
FIELD SERVICE
Indiana University

Acknowledgment

THE conference on "Planning Postwar School Buildings," held at Indiana University in July, 1944, was carried on under the sponsorship of the Bureau of Cooperative Research and Field Service, in the School of Education. Its purpose was to bring together schoolmen and architects interested in the study of present and postwar school building needs in Indiana in order that they might share their problems and their future plans for the mutual benefit of all.

The success of the program was in large measure due to the efforts of Harold E. Moore, Assistant Professor of Education, and Principal of the University School, who acted as chairman of the conference. The fine cooperation of those invited to participate in the program added much to the value of the conference for those who attended. It is hoped that conferences of this type can be held regularly in the future for the benefit of all interested in improvement in the school building field.

Thanks are due Miss Kathleen Dugdale for editing the proceedings of the conference and preparing them for publication.

H. L. S.

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Schoolmen and architects who attended the conference on "Planning Postwar School Buildings" held at Indiana University

Foreword

by

HAROLD E. MOORE

As a result of the great interest expressed by schoolmen throughout the state in planning building programs to meet future needs, especially needs in the postwar period, a conference was held at Indiana University on July 10-11, 1944, on the subject, "Planning Postwar School Buildings." This conference was sponsored by the Bureau of Cooperative Research and Field Service, in the School of Education, and was designed for school administrators, school board members, architects, and all others interested in the construction, maintenance, and operation of school buildings.

The objectives of the conference were as follows:

1. To provide a forum for the discussion of postwar school building problems.
2. To bring to our Indiana group outstanding leadership both from within and without the state in the school building field.
3. To bring together those state agencies and special groups, such as the committees appointed by the state superintendent, and thus give them an opportunity to benefit mutually from their thought and study.
4. To provide an opportunity for public school officials, architects, school board members, and college and university people to discuss the problems of schoolhouse planning in a somewhat less objective situation than is the case when an actual building is being planned —thus laying the groundwork for more intelligent planning in specific situations.
5. To emphasize above all that the buildings are being planned to serve an educational program—that educational planning must come first.
6. To open the doors for any later service that Indiana University may perform in assisting communities with their problems.

Among those who participated in the conference were directors of school building programs or other phases of school building needs, men actively engaged in educational research in the field, architects, city, county, and state school superintendents, and teachers. On the first day of the conference the program consisted of speeches by various authorities. On the second day panels were held and discussion groups thrashed out their problems together.

The conference program was as follows:

MONDAY MORNING, JULY 10

9:30 A.M. Registration - - - - - - - - Lobby—Union Building
Alumni Hall—Union Building

10:00 A.M. Presiding: Virgil Stinebaugh, Acting Superintendent of the Indianapolis Public Schools, Indianapolis.

10:45 A.M. *Address of Welcome:* President Herman B Wells, Indiana University.

10:25 A.M. Subject: *The Educational Program as the Controlling Factor in Schoolhousing.*

Speaker: T. C. Holy, Director, Bureau of Educational Research, Ohio State University, Columbus, Ohio.

11:15 A.M. *Discussion:* Mr. Stinebaugh.

11:45 A.M. *Statement of Conference Objectives:* Harold E. Moore, Conference Chairman.

MONDAY AFTERNOON, JULY 10
Alumni Hall—Union Building

1:45 P.M. Presiding: George C. Carroll, Superintendent, Terre Haute City Schools.

1:50 P.M. Subject: *Contribution of the War Emergency School Construction Program to Postwar Planning and Construction.*

Speaker: Wilfred F. Clapp, Director, School Building, Service, State Department of Public Instruction, Lansing, Michigan.

2:30 P.M. Subject: *Changing Standards in School Building Construction to Meet the Changing Educational Program.*

Speaker: John W. Lewis, Assistant Superintendent of City Schools, Department of Education, Baltimore, Maryland.

3:15 P.M. *Discussion:* Joseph L. Quinn, Jr., Acting Director, Division of Environmental Sanitation, Indiana State Board of Health, Indianapolis.

MONDAY EVENING, JULY 10
Alumni Hall—Union Building

7:30 P.M. Presiding: Deane E. Walker, Superintendent, Marshall County Schools; Member of Indiana State Board of Education, Indianapolis.

7:35 P.M. Subject: *Trends in Population and Public School Enrollment and Some of Their Economic and Educational Implications.*

Speaker: T. C. Holy, Director, Bureau of Educational Research, Ohio State University, Columbus, Ohio.

8:15 P.M. Subject: *The Probable Developments in Materials and Construction Methods in the Postwar Period.*

Speaker: Malcolm Rice, Coordinator of Postwar Building Program, Indiana University.

8:45 P.M. *Discussion:* Warren Miller, Chairman, State Board of Registration for Architects, Terre Haute.

TUESDAY MORNING, JULY 11
Alumni Hall—Union Building

9:00 A.M. Presiding: Frank E. Allen, Superintendent, South Bend City Schools; Trustee, Indiana University.

9:05 A.M. Subject: *The Significance of Planning for the Postwar Period.*

Speaker: H. L. Smith, Dean, School of Education, Indiana University.

9:25 A.M. Subject: *Financing the Postwar School Building Construction Program.*

Speaker: John W. Lewis, Assistant Superintendent of City Schools, Department of Education, Baltimore, Maryland.

10:05 A.M. Subject: *Discussion of the Financial Problem as It Relates Particularly to Indiana.*

Speaker: Otto K. Jensen, State Examiner, State Board of Accounts, Indianapolis.

INFORMAL CONFERENCE ON THE FUNCTIONAL PLANNING OF FACILITIES

Group I

10:40 to 11:25 A.M. Physical and Health Education and Recreation—Whittenberger Room.

Discussion Leaders
W. W. Patty, Director of Physical Welfare Training, Indiana University.
Harry R. Davidson, Superintendent, New Albany City Schools.
Malcolm Rice, Coordinator of Postwar Building Program, Indiana University.

Music Education—Woodburn Room

Discussion Leaders
S. T. Burns, Professor of Public School Music, Indiana University.
Ralph W. Wright, Director, Music, Indianapolis Public Schools.
Alvin M. Strauss, Architect, Fort Wayne.

Home Economics Education—Phi Delta Pi Room

Discussion Leaders
Hortense Hurst, State Supervisor of Home Economics Education, Indianapolis.
Orville Hooker, Superintendent, Marion City Schools.
W. E. Hanson, Architect, Connersville.

Industrial Education—Room B-C

Discussion Leaders
Melvin S. Lewis, Professor of Education, Indiana University.
H. B. Allman, Superintendent, Muncie City Schools.
Joe H. Wildermuth, Architect, Gary.

Agricultural Education—Room E

Discussion Leaders
B. C. Lawson, Professor of Vocational Education, Purdue University, Lafayette.
Harry F. Ainsworth, State Supervisor of Agricultural Education, Indianapolis.
Lester Routt, Architect, Vincennes.

Business Education—Town Hall

Discussion Leaders
Elvin S. Eyster, Professor of Business Administration, Indiana University.
J. C. Wagner, Superintendent, Hartford City Schools.
Harry E. Boyle, Architect, Evansville.

Audio-Visual Education—Room D

Discussion Leaders
L. C. Larson, Research Consultant, Bureau of Audio-Visual Aids, Indiana University.

Alex Jardine, Superintendent, Evansville City Schools.
Walter Scholer, Architect, Lafayette.

Group II

11:25 A.M. to 12:15 P.M. Library—Phi Delta Pi Room

Discussion Leaders
Margaret I. Rufsvold, Assistant Professor of Library Science, School of Education, Indiana University.
O. M. Swihart, Superintendent, Richmond City Schools.
D. J. Zimmerman, Architect, Indianapolis.

Secondary Education—Town Hall

Discussion Leaders
C. G. F. Franzén, Professor of Secondary Education, Indiana University.
H. E. Binford, Superintendent, Bloomington City Schools.
William McGuire, Architect, Indianapolis.

Elementary Education—Room B-C

Discussion Leaders
H. E. Moore, Principal, University School; Director, Bureau of Teacher Recommendations, Indiana University.
Harvey Poling, Superintendent, Monroe County Schools.
James B. Hawkins, Architect, New Albany.

Nursery School—Kindergarten Education—Woodburn Room

Discussion Leaders
Ruth G. Strickland, Assistant Professor of Education, Indiana University.
Mildred Thurston, Instructor and Critic Teacher in Early Childhood Education, Indiana University.
Lawrence B. Perkins, Architect, Chicago.

Art Education—Room E

Discussion Leaders
Earl Johnson, Principal, Burris School, Ball State Teachers College, Muncie.
Adrian Little, Superintendent, Huntington County Schools.
Wilbur Shook, Architect, Indianapolis.

Adult Education

Discussion Leaders
H. L. Smith, Dean, School of Education, Indiana University.
Ralph Watson, Business Manager, Indiana State Teachers College, Terre Haute.
C. E. Hamilton, Architect, Muncie.

Speech and Dramatics—Whittenberger Room

Discussion Leaders
O. P. Larson, Assistant Professor of Speech, Indiana University.
Mildred Wirt, Auditorium Supervisor, Gary Public Schools.
L. C. Bernard, Architect, Hammond.

TUESDAY AFTERNOON, JULY 11

Alumni Hall—Union Building

1:30 P.M. Presiding: Clara Van Coons, Member of Indiana Economic Council; State Representative from Montgomery County.

1:35 P.M. Subject: *Trends in School Enrollment and Population in Indiana.*

Speaker: Gerhard Ahrens, Assistant State Superintendent of Public Instruction, Indianapolis.

2:00 to 2:40 P.M. Subject: *Panel on Problems in Planning, Constructing, and Financing School Buildings in Cities and Towns.*

Harold Church, Superintendent, Elkhart City Schools, Chairman.
Otto Hughes, Superintendent, Columbus City Schools.
Maynard Darnall, Superintendent, Crawfordsville City Schools.
A. T. Lindley, Superintendent, Crown Point City Schools.
Harry Mourer, Superintendent, Bedford City Schools.

2:45 to 3:35 P.M. Subject: *Panel on Problems of Planning, Constructing, and Financing School Buildings in the Rural and Semirural Areas.*

Ira Huntington, Superintendent, Jasper County Schools, Chairman.
W. E. Wilson, Superintendent, Clark County Schools.
Arthur Hines, Superintendent, Wayne County Schools.
Fred Hayes, Superintendent, Vermillion County Schools.
Harvey Poling, Superintendent, Monroe County Schools.

3:40 P.M. *Discussion:* Raymond L. Pike, Director, Indiana Economic Council, Indianapolis.

The Educational Program as the Controlling Factor in Schoolhousing

by

T. C. HOLY

THE materials presented here have been organized around the four following subtopics: cost of providing land, buildings, and equipment for public elementary and secondary education in the United States; method of determining the utilization of school buildings; things that can be done to make school buildings better meet changes in the educational program; steps that should be taken to insure that the "educational program is the controlling factor in schoolhousing."

Cost of Providing Land, Buildings, and Equipment

Obviously the original capital outlay for land, buildings, and equipment, large as it is, does not cover the full expenditures for school buildings.

COST OF PROVIDING LAND, BUILDINGS, AND EQUIPMENT FOR PUBLIC ELEMENTARY AND SECONDARY EDUCATION IN THE UNITED STATES, 1920-1938*

Year	Total cost	Expenditures for land, buildings, and equipment	Per cent of total spent for land, buildings, and equipment
1920.....	$ 1,036,151,209	$ 153,542,852	14.8
1922.....	1,580,671,296	305,930,965	19.35
1924.....	1,820,743,936	388,469,143	21.3
1926.....	2,026,308,190	411,037,774	20.3
1928.....	2,184,336,638	382,996,156	17.5
1930.....	2,316,790,384	370,877,969	16.0
1932.....	2,161,170,060	210,996,262	9.8
1934.....	1,711,834,208	59,276,555	3.5
1936.....	1,961,103,765	171,321,674	8.7
1938.....	2,233,110,054	238,853,496	10.7
Total.....	$19,032,228,740	$2,693,302,846	14.2

* These figures taken from *Biennial Survey of Education* made by the U. S. Office of Education for alternate years for this period. They exclude interest on bonds.

If the interest charge on bond issues which are used to finance about 85 per cent of the school building costs, and the cost of operation and maintenance, all of which are actual costs of providing the school plant, are included, the proportion of the total cost of public elementary and secondary education required for the school plant is greatly increased. Summarizing, these proportions are as follows:

Land, buildings, and equipment	14.2%
Interest on bonds	4.7
Maintenance of the school plant	3.6
Operation of the school plant	9.3
Total required for school plant	31.9%

If this 31.9 per cent required for providing, operating, and maintaining the school plant is applied to the average cost of public elementary and secondary education for the years shown in the table, the result is an average annual cost of more than $600,000,000 for the school plant.

Method of Determining the Utilization of School Buildings

One of the first steps in determining the building needs for housing a given educational program is to study the degree to which the present plant is utilized. Different methods for doing that have been devised by different workers in the school plant field. (See form developed in Bureau of Educational Research, on the following page.)

The next question is what constitutes a satisfactory use of a school building. Quoted below is a statement taken from the *Survey Report of the Cincinnati Public Schools*, made by the United States Office of Education in 1935.

> It is obvious that 100 per cent utilization is practically impossible in normal circumstances, especially in high schools where it is impossible to make a class schedule which would fill every seat in every room during every period. In high schools a room utilization of 75 per cent for academic classrooms, 60 per cent for special classrooms, 60 per cent for the gymnasium, 45 per cent for auditorium, and 20 per cent for the lunchroom is considered high. In high schools, a pupil-station utilization for academic classrooms of 60 per cent is high, while special classrooms usually have a slightly lower pupil-station utilization.
>
> Elementary schools usually maintain higher percentages of utilization for both rooms and pupil stations. This is due to much simpler problems of scheduling. A room utilization of 90 per cent and a pupil-station utilization of 75 per cent would generally be considered as satisfactory.

Form SBS-1

BUREAU OF EDUCATIONAL RESEARCH
COLLEGE OF EDUCATION
THE OHIO STATE UNIVERSITY

ROOM AND PUPIL-STATION UTILIZATION
IN SECONDARY SCHOOLS

City.....

1) School..... Building..... Room No..... Floor.....

2) Room used for the following classes:.....
.....

3) Length.....ft. Width.....ft. Area.....Sq. ft.

4) Number of pupil stations..... Sq. ft. per pupil station.....

5) Could additional pupil stations be put in this room?..... How many?.....

6) If additional equipment is required for these additional pupils, list this equipment with estimated cost .....
.....
.....
.....
.....

7) Program for the room:

Period	Length of Period (Minutes)	Number of Pupils Occupying Room Each Period				
		Monday	Tuesday	Wednesday	Thursday	Friday
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

8) How many teachers use the room per day?.....

9) Above data for ..... semester ..... school year.

DATE.....

FILLED OUT BY .....

OFFICIAL POSITION .....

Ways of Making School Buildings Better Meet Changes in the Educational Program

Since the lifetime of a fireproof building as now constructed is at least 50 years, during which time many changes in the educational program will doubtless take place, the problem is, what can be done in the planning of these buildings so they can be adapted to these changes. Among the means which have been developed are the following:

1. First of all, see to it that the building, when planned, meets the requirements of the educational program it is to house, so that adaptations need not be made until the educational program changes.
2. Plan the buildings as *flexible* as possible. A great amount of flexibility is secured through the "unit type" of construction which enables partitions at the ends of rooms to be easily removed or changed. Heat and vent ducts, pipes, electric wires and switches, doors, and windows are placed in side walls in units of approximately 10 or 15 feet in such a manner that no difficulties are encountered in enlarging or reducing the length of any room. Equipment and built-in facilities should be so installed that changes may be made easily.
3. Wherever possible, plan for multiple use of rooms. For example, laboratories may be planned and equipped for other than laboratory use. Likewise, cafeterias may be planned for study halls or similar uses.
4. Vary the size of the rooms in accordance with the distribution of the size of classes in the school. An analysis of smaller high schools shows that the uniform size of classroom is the main factor in low capacity use.
5. Make the building expansible so that it can be enlarged as needed without requiring extensive alterations in the present building. This should be done even though at the time there seems little likelihood that an addition will be needed.

Steps to be Taken to Insure That the "Educational Program Is the Controlling Factor in Schoolhousing"

In my judgment, the greatest need in the school building field today is a comprehensive, well integrated, noncommercial, long-term program of research in the school plant field which absorbs each year nearly one third of all the funds expended for public elementary and secondary education in the United States. In fact, the estimated expenditure for research in all the public schools of the nation is $1,500,000 annually, as compared with an estimate of $200,000,000 for research by industry for the year 1936. To this end the School Plant Research Committee of the American Council on Education, of which I am chairman, has developed a comprehensive outline of studies needed in the field. These are grouped under the following general headings: (1) school building planning; (2) building materials, construction, and equipment; (3) service systems; and (4) contractual relations. The carrying out of this program awaits the securing of the necessary funds. Thus far $30,000 has been secured for studies in the equipment field.

Specific steps which will contribute to making the educational program the controlling factor in schoolhousing are the following:

1. Promote in the state and elsewhere the necessity of research in the manifold and complex problems inherent in providing satisfactory housing for the pupils in the public schools.
2. Determine first of all the type of school organization for which the program is to be designed; that is, whether for kindergarten—6-3-3, kindergarten—6-6, or kindergarten—8-4, and plan the housing accommodations accordingly.
3. Select architects who recognize that educational planning is the *most* important phase of schoolhousing.
4. Study carefully the trends in population and school enrollment and their distribution in the area which the building is to serve. This should include probable redistricting.
5. Study carefully and intensively the building requirements necessary to house the present educational program and changes which are likely to be made in the near future.
6. Demand that buildings be expansible and have the highest degree of flexibility consistent with good construction.
7. Seek to have Indiana added to the 20 states which now have a Division of Schoolhouse Planning in the State Department of Public Instruction.

Contribution of the War Emergency School Construction Program to Postwar Planning and Construction

by

W. F. CLAPP

Mr. Chairman and Friends:

THE opportunity given me by Mr. Moore to speak to you on this subject is indeed a welcome one. As many of you may know, I have been rather closely associated with this program from its inception. When the defense program first hit Michigan, it resulted in a tremendous aggravation in certain areas of an already serious school-housing situation. As director of the Division of School Plants in the State Department of Public Instruction, it was my duty and privilege to work with the representative of the United States Office of Education (Mr. Harold Moore) and with the Federal Works Agency to see what could be done to relieve the situation. Harold and I fought through some good battles together although we were not always on the winning side and, even when we did win, the victory was sometimes long delayed.

In the late summer of 1941 I was asked to work on this same program from the federal level with the United States Office of Education and was assigned to this region (Indiana, Illinois, and Wisconsin). For about two years I had the imposing title of Senior Specialist on School Facilities, and as such had contacts with many of you, especially those of you who are located in communities which have felt the war impact most acutely.

Just about a year ago I went back to my Michigan job and since then a considerable portion of my effort has been spent in trying to get more buildings to catch up with the seemingly ever-expanding population in certain parts of Michigan.

I mention all the above, not particularly to try to convince you that I am qualified to speak on this subject but, rather, so that you will understand that the obligation forced upon me by this assignment of thinking through where we have been, where we are going, how we might have done it better, and what we have learned, is not unwelcome. We are so busy in our rush of everyday affairs that oftentimes our jobs run us and we do not force ourselves to take time out to think about what we have done and what we should do.

As a matter of fact I am not as well qualified as some others might be to speak on this subject. My experience with the War Emergency School Construction Program is limited to Michigan and the other three states mentioned above. Others, including Mr. Moore, had experience in more states than I did and could no doubt do a much better job. You must take what I have to say with the above limitations and, if some of my statements are inaccurate for the country as a whole or for a particular locality, I shall welcome correction.

I believe the best way to get at the subject is to describe as

briefly as possible, but rather completely, the Emergency Construction Program from its start, and then later to try to draw some conclusions from our experience with the program. I realize this may be an old story to some of you, and perhaps boring to others, but I see no other way of getting on a common ground for purposes of later discussion. I shall not quote statistics and shall attempt no documentation, but will rather try to give a narrative account.

When the defense program was first inaugurated, you will remember that we were just emerging from the great depression. Industrial stagnation gave way almost overnight to an industrial boom. Gigantic defense plants were announced and construction was started. Tremendous expansion of military establishments took place. In Michigan the Chrysler Tank Plant and the Hudson Naval Ordnance Plant were constructed in a matter of weeks in an area that had been on the fringe of the outward movement from Detroit. The Willow Run Bomber Plant was constructed near Ypsilanti about 20 miles from the center of Detroit. In Indiana you know the story better than I. The Charlestown plants and the Kingsbury Ordnance Plant were constructed covering miles and miles of what had been farm land and employing thousands of workers in construction and later in operation. Such developments occurred to a greater or less degree all over the United States.

These developments brought about a tremendous shift of population and the effects of these migrations and the need for expanded community facilities to care for them were soon apparent. Early in 1941, the United States Commissioner of Education called for information from the states as to needs for school buildings in these areas. Our State Department made such a survey for Michigan. The School of Education of the University, in cooperation with the State Department of Education in Indiana, made such a survey for Indiana.

As a result of such information reaching Congress, the Community Facilities Bill was passed as a section of the Lanham Act.

The Lanham Act, or rather the section of the Lanham Act we are talking about, provided that when an influx of population in an area, due to the defense program, made existing facilities inadequate to care for the expanded population, and when the community was unable to provide them itself, the administrator of the Federal Works Agency could take steps to provide them.

At that time the Federal Works Agency (FWA) consisted of several divisions. First the PWA. New PWA applications had not been accepted for some time but its skeleton organization still existed to complete such projects as the Chicago subway. You will remember that during the early days of the depression the PWA built many school buildings, on a matching basis, with local communities taking responsibility for architect and contractor. Some good school buildings were built under this program.

Second, the WPA. This agency still existed as part of FWA.

Third, the Public Buildings Administration. This part of FWA was primarily concerned with building and operating federal buildings in Washington and elsewhere. The FWA also contained the Public Roads Administration and other subagencies, I believe.

After the passage of the Lanham Act, a new agency called Defense Public Works was set up and into it were transferred the PWA personnel. The purpose of DPW was to get some badly needed buildings built in a hurry. But the personnel was largely PWA, schooled in PWA procedure. This procedure was far from rapid. It involved extended engineering, legal, and financial studies both in the regional offices of FWA and again in the Washington office. Furthermore, the PWA (now DPW) was used to build buildings which were substantial and permanent. The idea of large numbers of temporary structures, mass-produced and shipped where needed, as proposed by Henry Alves of the United States Office of Education, did not get much consideration.

What was the relationship of the United States Office of Education to this program? Although the United States Office had been active and foresighted in determining needs for school buildings, and had even employed a few field representatives in the pre-Lanham Act days without really knowing just how it was going to get the money to pay them, the United States Office of Education was not mentioned in any way in the Lanham Act. The Federal Works Administration had the sole responsibility of determining need and war connection. After considerable negotiation, however, a Presidential directive made necessary a certification of necessity by the technical agencies involved, such as the United States Office of Education for schools, the United States Public Health Service for hospitals, etc., before Presidential approval of an application could be obtained.

Furthermore, the United States Office of Education had no funds with which to employ personnel to survey needs and make reports and recommendations on which certificates of necessity could be written. What actually happened was that the FWA gave the Federal Security Agency (of which the United States Office of Education is a part) funds from the Lanham Act so that it could have an adequate staff.

The United States Office then employed senior specialists on school facilities with one or more assigned to each region of the Federal Security Agency. The senior specialists were assigned to, and were part of the Staff of the Office of Defense, Health, and Welfare Services, but were primarily responsible to H. F. Alves, Senior Specialist in State School Administration in the United States Office of Education. Senior specialists were instructed to work closely and cooperatively with the State Superintendents of Public Instruction in their states. The state superintendents were requested to assign a staff member (preferably the one in charge of school buildings) to work and travel with the senior specialist.

There was considerable variation in the extent to which it was possible for state departments to work closely and cooperatively with the senior specialist. This was caused by several factors, among which were:

a. The existence or absence of a School Building Division in the state office, and the effectiveness of that division where it existed.

b. The degree of confidence which the state office had in the United States Office of Education and in the federal administration as a whole.

c. The lack of funds in budgets of state departments to permit assignment of a person to work with the senior specialist. A scheme was worked out so that Lanham Act funds could be used for such a purpose. In some states they worked out well; in others, for one reason or another, it did more harm than good. Also most, if not all, state departments, are decidedly understaffed, and each person was so loaded down with regular responsibilities that he had little or no time to spend on a new development—no matter how great an emergency it might be.

How did one proceed to get a building? Briefly the steps were as follows:

1. An application was filed with the Federal Works Agency. This application (9 copies) was very similar in form to the old PWA application forms and required extensive legal, financial, and engineering information. The services of an architect and a lawyer were practically required.
   In the early days of the Lanham Act, before war had been declared, many schoolmen and other public officials considered it as another form of PWA or WPA—an opportunity to get something they had long awaited but could not build with local funds—a gymnasium, an auditorium, a new teacher college building, etc. Often the defense connection was extremely tenuous, to say the least. Therefore the application had to be rejected *in toto* or modified radically—and the labor of filling out the application and the fund paid the architect were lost. This was partly the fault of DPW, as local resident engineer offices were established and these engineers themselves were not thoroughly informed as to the requirements for qualification under the terms of the act. Sometimes local units of government were encouraged to apply when there was little chance of the applications being approved.
2. The next step was a study of the case by the senior specialist in cooperation with the State Department of Education and local authorities. Such a study included evidence of war connection, normal capacity of present buildings, present enrollment, expected increase in enrollment, financial ability, availability of other usable facilities in the district or in neighboring districts.
3. Soon after the senior specialists were employed—as soon as they were able to "catch up" on existing applications—steps one and two were reversed. It was possible for the specialist to visit areas where he knew there were problems or where he knew problems would develop, and to study the needs with the local authorities and then advise as to whether or

not an application was warranted and, if so, what should be applied for.

4. The senior specialist then made a report and recommendations to the United States Office of Education. Copies of the report went to the State Department of Education, the FWA regional offices, the regional office of FSA, and sometimes to the applicant. ODHWS then recommended to Regional FWA and the United States Office certified the need to Washington FWA. Concurrently the application was being studied by regional FWA and then forwarded to Washington FWA where it received further study. Presidential approval was finally recommended by FWA and, when received, construction was started. A few buildings were started and almost completed before Pearl Harbor.

With the declaration of war, the expansion of the defense program, and the developing shortage of critical materials, it became more and more difficult to obtain approval of an application. More and more agencies had to give the project their blessing before it could be approved. These agencies included the War Production Board, the Army, Navy, Maritime Commission, a Critical Areas Committee, the War Manpower Commission, the Budget Bureau, the WPA, the FHA, the FPHA, and others at various stages. Such long delays occurred that resurveys and resurveys of resurveys were required. Resurveys were made not only by the senior specialists, but by representatives of several other agencies, all calling for more information, much of which had already been submitted. Each representative, of course, considered himself as the important one and gave advice which often conflicted with the advice of the other representatives. The school official spent much of his time with the "so-and-so's from Washington" and became justifiably disgusted with the whole affair.

This became especially serious in some communities where the trouble was caused by the building of large numbers of war housing units by the federal government. In many such communities the local people took the attitude, "Why doesn't the federal government leave us alone and let us run our school as usual for our own kids." "Let the federal government build and operate its own schools for the people (hillbillies) it has brought in here." The weaknesses of this position are of course quite apparent, yet we can all understand how it could develop.

Finally the FWA and the WPB, but not the United States Office of Education, agreed that 200 per cent capacity should be required of existing buildings before new buildings could be built, and more restudies were made on this basis. A large number of projects were cancelled as a result of this order. This criterion is still in effect officially, but in actual practice has been modified considerably.

As a result of this delay and the changing of FWA administrative personnel (the WPA was being "liquidated"), the FWA more

and more took the attitude that it would take entire responsibility for the program and would not require or welcome recommendation and certification from the United States Office of Education. Consequently, about a year ago funds to pay the senior specialists were withdrawn and the United States Office was left out of the picture. I believe this move has tremendous significance in terms of administration of postwar federal help. I'll expand on this later.

In justice to FWA, I must state that in recent months procedures have been simplified and the processing of applications expedited. Understandings have been reached with WPB and other agencies so that long delays do not occur. In my state, the FWA state engineer's office works very closely with our office and will not act favorably on an application without our O.K. The critical materials situation has eased up and we are now getting approvals of buildings of pretty fair construction.

Now, what contribution has all this made to the planning and construction of postwar buildings? What have we learned which can be of use to us in the postwar program? Many things that I shall say now are not new. They have perhaps received new emphasis as a result of our experience.

First, I believe that experiences with PWA, WPA, and lastly FWA, have taught us something about federal aid for school buildings, and how it should be administered. Federal aid for school buildings should be granted only after study of needs by regularly constituted educational authorities and certification by those authorities. By regularly constituted educational authorities I mean state departments of education and the United States Office of Education. There should be little or no pre-application contact between the Federal Construction Agency and the local school unit. Agreement should be reached as to the needs before application is made. There is no objection to a Federal Construction Agency sharing in the building of buildings, but educational matters should be decided by educational agencies. Let me give you some examples of reasons for this.

In one township in Michigan in a rural area there are three small towns. Each one of these towns used to operate a 12-grade high school. The largest unit had a high school population of not over 80. The others were smaller. For some time we had been trying to persuade these schools, without success, that they ought to get together and run one good high school rather than three submarginal ones. During the PWA-WPA days direct contacts by these schools with the federal agencies resulted in each school getting a federal grant for an addition of some sort, an addition which effectively froze the existing organization for some time to come,

In the Warren Township area just south of Detroit, where the Chrysler Tank Plant and Hudson Naval Ordnance Plant are located, we have a hodgepodge of school district organization. These districts a comparatively few years ago were "primary" school districts, operating one-room rural schools, with three-member boards of education.

The district lines were badly gerrymandered, leading to some ridiculous situations. During recent years, the area has been filled up with low-cost housing. The construction of the war plants accelerated this movement. Even before the influx, some of these schools were on half-day sessions. Two of the districts were operating 12-grade high schools. A third operated overcrowded elementary schools with a problem of finding high schools for the pupils to attend. We proposed at the start of the Lanham Act program that these three districts unite and build, with federal help, a complete adequate high school plant for the area, thereby solving the high school problems and relieving present buildings for elementary school purposes. If we all could have a clearly defined policy to work on, I believe such a reorganization could have been effected, and we would now have a sound program there. The United States Office representative saw the problem and was cooperative to the greatest degree possible. The FWA tried to cooperate, but felt, perhaps rightly, that its job was to provide needed space and not to pull our chestnuts out of the fire. Lack of a unified approach, plus the need for haste, plus local jealousies killed the idea, and we still have a bad situation as far as high school is concerned, although some partial relief has been found for the elementary schools by construction of needed grade school buildings.

Other examples could be given. The point is, that a program of federal aid for school buildings should be so administered that it will encourage sound long-time planning, sound district organization, sound finance, and will result in better educational programs. Many states still have the small district organization. Michigan has 6,274 of them, Illinois about 11,000. If we are ever going to have equalization of educational opportunity and equalization of educational support, we must have reorganization, preferably on a community area basis.

The small high school problem exists in all states. A high school is more than some added grades and added academic classes. It takes both sufficient population and sufficient valuation to make possible a real, complete, broad, high school program. We must encourage the development of sound high schools and encourage the closing of submarginal high schools, unless isolation or some similar factor makes their operation essential.

A soundly conceived and administered program of federal aid for school buildings can help to bring this about. A repetition of former practices can freeze existing inequities and insufficiencies and delay real progress for years. The attitude of the FWA in edging the United States Office out of the picture is not an encouraging sign. The way the FWA state office in Michigan is working with us at present is encouraging. But this is important enough so it should not be left to chance relationships. There must be a careful plan and a clear statement of policy.

Make no mistake about it, if and when federal aid for buildings comes after the war, it will be part of a general public works program. It will come because there is unemployment and it will be designed primarily to relieve unemployment in a hurry. It will be another emergency program. We will all have to "hurry to get in on it before the money is spent." There won't be time to fuss with ultimate plant planning and district reorganization. This is the way it will be if we don't plan carefully now on a national, state, and local basis.

The forces of education must have a strong, united voice. We don't have it now, and never have had it. There will always be disagreements about some things, of course. But there ought to be some general basic policies and objectives we can all agree on and all work toward. Unless we do, the voice of education in the halls of Congress will continue to grow weaker rather than stronger.

We must have a stronger United States Office of Education, reorganized to cope effectively with existing problems. The United States Office should be strong in leadership, strong in stimulation, strong in cooperation with the states, strong in research, but not strong in the regulatory sense. We do not want a national system of education, but we need badly a national educational policy and program. The office needs adequate leadership, an adequate budget, and adequate personnel. We can have this if we want it. The state superintendents are a powerful group and can give effective support for a better United States Office. Their organized leadership is already being felt.

The United States Office should include a strong and active school plant division. It should be adequately financed and staffed. It should be organized as a service agency on school plant problems. It should have a budget so that trained field representatives could be employed, not to interfere with state or local programs, but to be available on call from states to help in their state-wide school plant studies and programs. It should now be developing, cooperatively with the states, policies and plans for the school construction program that must take place after the war.

So much for the federal level. Certainly our experiences with PWA, with WPA, and more recently with FWA have demonstrated the need for a strong school plant division in each state department of education. Among the functions of such a division should be:

a. To assist local school districts or corporations in making school plant studies and surveys leading to the development of an ultimate school building plan in the district.
b. To assist local districts in the educational planning of school buildings.
c. To assist local districts in the remodeling and modernization of existing buildings in order that they may serve as a better tool for the changing and developing community educational programs and in order that they may be better utilized.

d. To keep adequate records regarding existing buildings, their date of construction, the kind of construction, the facilities included, their cost, the name of the architect, the name of the contractor, etc.

e. To assist local districts in matters of custodial services and in problems of the operation and maintenance of these buildings.

f. To approve plans and specifications for new construction. This need not be done primarily on a regulatory basis, but rather on a service basis, with a large part of the services given in the development of preliminary plans. A guide, code, or manual for planning school buildings should be formulated, preferably not statutory. Under this function the school plant office should serve to stimulate and encourage better design rather than to freeze existing design. In none of these functions should the school plant office consider itself as paralleling or supplanting the services of the architect. The school plant office should be interested primarily in educational designing, not in engineering.

g. Never to consider itself as a self-sufficient, walled-off, part of the department. This would be fatal. It must work cooperatively with the division of instruction, the division of finance, and the division having to do with reorganization. Certainly we cannot intelligently plan a building apart from the educational program which is to be operated therein. Form must follow function. The building must be designed from the inside out. No building can be intelligently planned without knowing the financial ability of the district. No building program can be developed without consideration of the possible effects of school district reorganization of the area. Also, for obvious reasons, the school plant division should have strong cooperative working relations with the State Health Department and the State Fire Marshal.

In working with school officials at the local level on the war emergency construction program, we have had many interesting experiences and many problems. From them, perhaps, some conclusions can be drawn which may be of some help in considering postwar planning and construction. Again, there is nothing new about these conclusions, but our experience has certainly emphasized them again.

I think the outstanding difficulty was in the inflexibility of district boundaries, the legal barrier to getting something done which is admitted by all to be the sensible thing to do. Legislatures seem to have gone out of their way to make it difficult to change district boundaries or easily transfer students. Perhaps this is as it should be. I would be the last one to advocate that district boundaries be changed at the whim of some federal or state official. And yet, the movements of population, the fanning out of city population into outlying areas, certainly make changes desirable. Attention ought to be given to easier ways of making such changes when it is appar-

ent that they will result in improved education for all. Perhaps in considering the rights of the people, we have thought of people in terms of groups that are too small, groups that may have special interests which do not always coincide with the welfare of children. After all, these boundaries were originally made to facilitate education for children rather than to prevent it.

There was brought to our attention forcibly, time and again, the need for continuing surveys of building needs, and an ultimate school plant program for each community area. Communities which had done this, wholly or in part, were well prepared to state what they needed, why they needed it, and where they needed it. What they eventually received, although it may have been less than what was desired, still fitted into the total school building plan for that community.

The need for advance site selection was continually brought to our attention. The inadequacies of present school sites were a continually hampering factor. When we enlarge a building on an inadequate site we cut down the amount of available playground space and increase the load on the space at the same time. It always seems too late to do anything about school sites. But it is never too late to begin to convince our boards of education of the need for better sites and better site planning. The development of an ultimate school plant program will certainly indicate something about future site needs. Buildings cost a lot of money and last a long time. The mistakes we make are permanent ones. Let's not hamper an educational program for 50 years by compromising on sites at the start.

Expansibility and flexibility have long been emphasized in school construction. The wisdom of such practices was continually emphasized. Often the sensible thing to do was to expand an existing building to take care of increased population, yet it could not be done because of lack of foresight in the original design. Often conversion of facilities from high school use to elementary school use was indicated, yet poor design made this difficult. In many cases we tried to suggest that emergency buildings be so planned that they could easily be converted to other kinds of use after the war. The FWA was usually quite cooperative in this respect, yet sometimes the critical materials situation made this difficult.

Another fact that continually bothered us was the permanence and immovability of school buildings. For example, in the city of Detroit we have overcrowded high schools and elementary schools on the edges of the city, with many vacant rooms in the older central part of the city. This is also true in Chicago and, I suppose, it is true of many other larger cities. The mobility of population seems to be increasing rather than decreasing. People pack up and move much more than they used to. Thousands of people are living in trailers (if you can call it living). What does this imply for the future construction of schools? Will we, in the not too distant future be designing demountable school buildings as well as prefabricated, demountable houses? Schools will have to be where the people are. If the people move easily, will it be possible to design schools that

can be moved easily? Perhaps later speakers on this program may have some answer to this.

What kinds of buildings were built during the War Emergency Program? This cannot be answered generally. The answer varies according to the part of the country, the nature of the development for which the building was built, the critical materials situation at the time the building was designed and built, and other factors. In general, I think all concerned tried to avoid building ghost buildings. In temporary housing developments, the buildings were more or less temporary. In permanent situations, good permanent additions were built, especially in the early part of the program. Later in the program, when materials were most critical, many undesirable substitutions had to be made. For example, the buildings at Willow Run have cement floors in corridors and in most classrooms. Some of the partitions are of fibreboard. The walls are of cinder block. The ceilings are of wood with beams exposed. The heating and ventilating is by forced hot air with corridors serving as return ducts to the fan room. This is inefficient, expensive to operate, does not heat each room evenly, and is noisy in places, yet it was all that could be obtained at the time the building was designed and built.

And yet the Willow Run buildings "have something," I believe. The clerestory lighting arrangement gives a more even distribution of light in the classroom. The total appearance of the building, while quite unconventional, is, I believe, friendly to children. The architect used considerable imagination in his treatment of the materials available. Teachers in these buildings have said that they like the classrooms better than others they have taught in in more conventional buildings.

The Carver School, a one-story cinder block structure in a colored housing development near Detroit, although it has some of the undesirable features of the Willow Run buildings, also has something. It is simple, of inexpensive materials, and certainly not ornate. Yet it is friendly. It fits the landscape; it is usable.

We have, perhaps, learned from these and other buildings built during these strenuous times that usable school buildings can be built of cheaper materials. George Schultz, the school building man for the Detroit Board of Education, has stated that they will continue to use bare cinder blocks for upper classroom walls. When painted a light color, they do not absorb too much light, and do have desirable acoustical properties.

Some of the emergency construction will undoubtedly have to be discarded at an early date. But much of the construction that I have seen will, with postwar finishing, continue to serve its purpose well. Heating and ventilating will have to be improved in many of the buildings; wardrobes or lockers will have to be installed rather than wall hooks; face brick exterior may be needed in some cases; and some additional cabinet work may be needed. Some of the buildings were designed so that they can take a second story later without major changes in the lower story.

I think the greatest fault in the planning of these buildings was that they were planned in too much of a hurry and by others than the ones who were going to use them. It just had to be this way in this program. It does not have to be this way in postwar planning. Now is our opportunity to plan buildings the way they ought to be planned. Certainly techniques should be developed so that the teachers, the janitors and yes, even the children, have a real opportunity to contribute ideas about this place where they are going to live and learn together. We haven't done this much up to the present. Too often we have had to be in too much of a hurry to replace a building destroyed by fire or to take care of a sudden influx of population. I believe better buildings can be built if we can get true cooperative planning by all those who are to use the building. How much better an architect can serve in designing a building to implement an educational program if he has an opportunity really to know what is wanted and why it is wanted.

This is much more difficult than just building some more classrooms. It will take more time and more thinking, more discussion, more meetings and conferences, more disagreements and more arguments, but if it is really done well it will result in some really fine school buildings. These buildings will not be modern or different for the sake of being modern or different but, rather, to serve their main purpose, that of implementing a changing, improving, community school program. They will be designed from the inside out. They will be beautiful because they are useful and because they fit children. Now is not too early to plan them.

Changing Standards in School Building Construction to Meet the Changing Educational Program

by

JOHN W. LEWIS

To speak with any authority on "Changing Standards in School Building Construction to Meet the Changing Educational Program" a person would first have to qualify as a major prophet. I make no such claim. The adjustments of building standards would be a comparatively simple process if someone could predict just what changes will take place in the educational program. Such predictions must be made not for a two-, five-, or even a ten-year period, for the buildings to be erected are to serve that program possibly for 50 or 75 years.

There are two possible methods of reducing, to some degree, the length of time for which such predictions, or guesses, have to be made. The first method would be to build schools of cheaper construction with a life expectancy of 25 to 30 years, with the idea of replacing them at that time with buildings designed to fit the educational program then existing. Unfortunately, it is impossible to build a building on the principle of the one-hoss shay, serviceable to the day of final collapse. In general, a building designed for 25 years will, with proper maintenance, be good for 50 years. Perhaps the development of materials will provide us a means of building such a structure at a sufficient saving to justify this procedure, but at the present time the difference in cost between a permanent structure and a "permanent temporary" structure is not great enough to justify the extra maintenance costs.

The second method is to design a structure of maximum flexibility to simplify the problem of alteration to adjust to the changes as they come. The amount of such adaptation is limited, but the avoidance of weight-bearing wall partitions and the efficient planning for extensions should permit some change in room sizes and the addition of missing facilities.

The setting of any standards has both elements of strength and points of weakness and danger. Certain minimums required for utility, health, sanitation, and safety are essential. The danger lies in the gradual acceptance of these minimum requirements as the ultimate to be achieved. If, for example, we set a minimum standard of 18 square feet per pupil, the architect who meets such a standard is satisfied that he has met requirements even though the resulting classroom is entirely too small for the educational program to be conducted in it. While certain minimums must be required, standards in the form of guiding principles which are suggestive and stimulating rather than compulsory and restrictive will, in general, achieve better functional planning and design. The architect whose horizon is bounded by a set of rigid standards will not produce as good a building as one

whose attention is directed primarily to the educational program which the building is designed to serve.

Designing buildings to fit an educational program partakes of the nature of a tailor-made suit. The tailor who makes a suit for an individual customer he has not seen, and whose detailed measurements he does not have and cannot get, would have a most difficult job. If he knew the height and weight of the individual and a few other characteristics, he might on the basis of experience create a suit which would have a reasonable probability of fitting. Similarly, we must attempt to project, from the few things we do know, the characteristics of the educational program for which we must design.

We start with the presumption that the educational program will be shaped to the pattern of the social, economic, and political order which it, in turn, is to serve. What is that probable pattern for the next two generations?

We may expect a great period of technological advance. While the rosy dreams of the advertising men have outdistanced their engineering departments, it is only reasonable to suppose that vast improvements will be made affecting almost every phase of life. The application of these new scientific discoveries will be translated into more efficient methods of production. What we have achieved thus far in the war indicates that if we are properly organized, we already have a technology sufficiently developed to produce all we can possibly use for a standard of living much higher than we now enjoy. Further technological advance should shower us with an even greater avalanche of the best things that our imaginations can create. Improved production methods will bring a further reduction in the hours of work required to produce what we need or can use. This will give us much more leisure time which may become a curse as well as a blessing.

Our scientific progress will give us better tools and equipment to further the educational process. In addition to sound motion pictures which we have had but have used so poorly, we will have television. As a matter fact, television was ready before the war, awaiting only the development of the commercialization of programs. The development of electronic microscopes and better means of projection are but two of the many items of interest to the educational program.

One significant development which has been characteristic of the past 25 years, but which has been given new impetus during the war, has been the de-skilling of various operations of production. Jobs that formerly required skill of a highly trained machinist have been broken down and taken over by machine operators who learn their work in a matter of days or even hours. Even tasks heretofore assigned to highly trained engineers have, during the war, been taken over by those trained to do a narrow segment of the work. Undoubtedly this procedure will be continued and extended in the postwar years.

Along with our scientific advance there will be a greater accumulation of knowledge with which our pupils must become familiar and to which they must become adjusted. The world in which we

live will become much more complex and we will have a greater technical heritage for education to pass along to the coming generation.

One question to be considered will be the number of workers needing to be trained for the various occupations. If we set our sights on the thirties we might conclude that we are already training a surplus for all occupations, from that of the common laborer to the highest trained engineer. If we judge on the basis of present employment, we have a shortage in all fields. While we may, for a time, go through a period of surplus manpower, the nation cannot exist half employed and half idle. Our programs should be based upon the assumption of reasonably full employment which will ultimately be achieved.

Along with these economic changes will undoubtedly come social changes as well. Submerged and economically underprivileged groups will gradually work towards a position of greater equalization of opportunity. Improved economic conditions will release new potentialities in vast segments of our population. Improved standards of health and sanitation will further this process. There will emerge the realization that maximum prosperity and well-being can be achieved only as it is based on the welfare of all groups Any system based on the welfare of only part of us carries within it the seeds of its own decay.

Politically, the coming period will make increasing demands on the civic intelligence of our electorate. As our economic and social problems become even more complex, the present trend toward governmental participation and control will be accentuated. The test of our democracy will be how rapidly and how well it can develop the techniques of efficient governmental administration. Intelligence and flexibility of mind, the ability and willingness to adjust to new conditions, will determine our survival under democratic institutions in a tense period of rapid change.

If these sketchy generalizations give a part of the pattern of the years ahead, what are their implications for the educational program and for the buildings to house that program?

One fact which emerges clearly is that our program and facilities must, to an increasing degree, be planned for adults as well as children. Time will not wait for the children now in schools to become voters who will push the oldsters off the stage of control. We must engage in a retraining program for adults to make up for the shortcomings in our previous educational program. This retraining will be not only vocational to adjust to changes in industry, but social, economic, and political as well. Gone are the days when we will be content to use our building 30 hours a week and 40 weeks a year. Our facilities must be designed for greater multiple use.

The program of adult education based upon the pattern of a day-school program transferred to evening hours will serve some of the younger groups whose education has been interrupted. This conception of adult education, however, must give way to a broader program, much more informal in scope and method. Lectures, forums,

and short course study groups become a first addition to be followed closely by dramatic, musical, artistic, hobby, recreational, and social interests. Such a well-rounded program will not aim to occupy all the leisure time which we will have in increasing measure, but should prepare for much richer use of leisure time spent outside the walls of a school building.

Obviously, a building consisting of standard classrooms would be able to serve only a small part of such a program. How then should the required facilities be designed? The first principle of such planning should be the segregation of many of these facilities in a section of the building complete with all facilities such as adequate exits, toilets, and segregated heating, which will permit separating this section from the rest of the school plant.

What should be included in this community-use section? One of the first units should be the auditorium. In many school systems, because of limited funds, this has been designed as a combination auditorium-gymnasium. This hybrid has not been of maximum utility.

The problem of setting up, taking down, and storing chairs has greatly interfered with the flexibility of its use. Too often its after-school use for basketball by a dozen persons has conflicted with its use for auditorium or other purposes by a much larger group. The program of community use as well as use for day schools demands that wherever possible a separate auditorium and gymnasium be designed.

In the planning of auditoriums, the greatest weaknesses have been, first, that the capacity of many auditoriums has been too large, and second, stages and stage equipment have not been designed for efficient use. While a school system may well afford one large centrally located auditorium for large community meetings, it cannot afford a number of them for the comparatively few times they are used. New York City has only one or two legitimate theaters with a seating capacity of over one thousand. As auditoriums increase their capacity beyond six or seven hundred, it becomes increasingly difficult for any dramatic group, much less children, to project itself beyond the footlights. An auditorium seating as few as three hundred, if limited because of finance, is greatly to be preferred to a combination auditorium-gymnasium. It may be noted parenthetically that the importance of the drama as a means of development and self-realization of children is likely to receive increasing attention in the years ahead. For such use a small auditorium has many advantages.

The designing of the stage has too often been conditioned by its yearly use for commencements. The proscenium has been made much too wide in order that all the pretty girl graduates may be seen, forgetting that a proscenium opening of 32 to 34 feet is adequate for professional stage companies. A complete gridiron and fly loft are not required for the average school auditorium, even if it has extensive use by dramatic groups. Adequate provision must be made for the efficient storage, handling, and quick changing of scenery. In general, a space equal to one half the proscenium opening

should be left free on each side of the stage, in addition to space allotted for permanent storage of scenery and stage properties. Adequate planning for stage rigging, dressing room space, proper lighting, audio-visual aids, and provisions for darkening the auditorium are presupposed.

The gymnasium, or, in the case of the larger secondary schools, the gymnasiums are also housed in the segregated section of the building. Folding gym stands have in the past few years been replacing unsatisfactory galleries for spectators. Improvement in hardware has now given us satisfactory folding partitions in order that two gymnasiums may be thrown together for the larger competitive events. Present practice of providing one dressing locker for each six or seven compartment lockers makes unnecessary the provision of additional dressing lockers for adults. Duplication of compartment lockers for a large adult program would be expensive and unnecessary, since the adults could be required to carry back and forth any change of clothing required. Since the gymnasium will be used for dancing, provision for checking wraps should be made which would also serve those using the auditorium.

The music room logically falls within the group of facilities to be segregated for community use. Provision for storage of musical instruments should not be overlooked. Instrumental practice rooms are a valuable adjunct to any facilities for music.

The cafeteria, which may be required for serving dinners or banquets, also fits into the multiple-use pattern. The foyer outside the cafeteria, auditorium, and gymnasium may on occasion serve as an additional game room, and should be designed for maximum utility in connection with all social events which may be held.

The addition of one or more shop or craft rooms in the unit will serve a multitude of purposes. If located near the auditorium stage, such a room serves as the room for construction of stage scenery. Arts and crafts will find a large place in an adult program. One large city has developed a very interesting program by providing facilities where persons may come and work on their hobbies. It may be construction of furniture; it may be working out in wood and steel a new gadget or a model of an invention; it may be an urge towards painting, craftwork, or sculpture. Multiple-use craft rooms have already demonstrated the value of their inclusion.

Some communities have found use for another type of room, directly accessible to the public, which will serve many purposes and which may be used even if no other part of the building is open. It may serve as a polling place, a committee meeting room, or, during the war, as a ration board or draft board office. In some buildings the bicycle room—too often neglected—can be made to do double duty for some of these occasional uses, if the bicycle racks are moved and hidden by screens. A separate supplementary means of heating will often save the operation of the central plant.

The exact nature of the community-use program will vary with the need. In some places it may be more extensive than has been sketched, making provision for a swimming pool, community health,

and other services. In other communities public sentiment may not yet support even a minimum program because of the expense. It must not be forgotten, however, that service to the community is one potent means of creating support for all phases of the educational program.

We now come to a consideration of the day-school program and facilities. May we expect any radical change in the fundamental design and construction of buildings? So far there have appeared no new materials or methods of construction which call for radical changes in construction. Improvements? Yes. Revolution? No. In these sections of the country where mild weather is the rule (and experimentally elsewhere) there will be a continuing movement towards one-story construction, offsetting increased costs by savings in fireproof construction, stairways, and wider corridors in multi-storied units. In such structures the old rule of unilateral lighting will go into the discard. Where weather permits, the outdoor classroom follows as a logical corollary. This change in design will go hand in hand with the program of blending the classroom with the outdoors. Classrooms in such units will no longer be a box-like place of confinement. Vistas through the large glass areas lead to the great outdoors—one step away. There will undoubtedly be a psychological freedom and liberation which will be of untold benefit, particularly in the lower grades, which those of us designing for sterner climates, with high heating and maintenance costs, must try to catch to some degree in other ways.

The atmosphere of freedom and activity, as opposed to formalism and regimentation, is impossible in the barren conjested classrooms to which we have been accustomed. More classroom space is required if construction standards are to meet existing educational practice, even without considering the future. A poll of classroom teachers, as a basis of formulating new construction standards, revealed first of all a demand for more space.

The second demand was for a revision of facilities provided for these classrooms. Provision for greater storage space, display cabinets, book and library shelving, more bulletin board space, and running water was universally demanded as essential for a modern elementary classroom. The architect's ingenuity will be taxed to provide all these facilities within reasonable space. Wardrobes or corridor lockers or a combination of both are likely to replace the old cloakroom, giving the first start towards more space. Built-in storage in the corridor wall will be used in increasing measure. The extent of blackboards is likely to decrease but, where demanded on a side wall, they may well be encased in metal frames with rollers and serve as sliding doors covering storage space. Fixed bulletin boards may well be reduced in amount and bulletin boards in light aluminum frames may be hung over blackboards, thus providing for multiple use of this space. We must aim at a classroom design to fit the need for the particular grade or subject, and give the teacher these facilities needed for a modern educational program.

Our program of health and physical education will receive a new

impetus after the war, particularly in view of the draft rejections for physical defects. Strangely enough, our showing in this draft appears no better that in the last war in spite of the increased attention to physical education in the intervening years. Two or three facts must be kept in mind. It may be unreasonable to expect the school to provide facilities for the total physical activity of its pupils whose outside exercise may be confined to opening and closing the door of the family car. Our emphasis must be shifted from spectator sports with participation by those already physically fit to a basis of much broader participation. Moreover, physical fitness it not synonymous with muscular development. Draft rejections for weak muscles were relatively small. Increased emphasis on the health aspects, with our physical education program, supplemented with corrective work and a follow-up on physical defects, will be increasingly important. The existence of eye defects will stimulate us to increase our lighting intensities. Although schoolmen have not been entirely satisfied with the way lighting standards have been set, they will insist on a minimum of 12- to 15-foot candles for the ordinary classroom. This will be accompanied by greater variety of color in the classroom and some lightening of the present "school furniture brown" for equipment.

Tied up with the program of health and physical education will be the problem of adequate school sites properly developed. Where possible, some natural or planted area will surround most of the building. Provision will be made for an impervious surface for use in bad weather. A large area or series of large areas will be developed for play, keeping in mind that, if turf is to be maintained, adequate areas should be available to provide rotation in use. A segregated area for the kindergarten can be developed to serve as a "tot lot" outside of school hours. Standards and procedures for playground development to provide maximum use with minimum maintenance are already available.

The development of tennis courts, volleyball courts, and a swimming pool should all be considered in light of planned community use. Needless to say, parking areas no longer can be neglected.

All of these factors add up to the necessity of providing school sites of adequate area.

What facilities shall we provide for vocational education? Training for agriculture will continue to be important in agricultural centers. The de-skilling of many jobs will have a profound effect on our program. There will still be a need for trade education in the larger communities or in a centralized trade school to serve a number of communities. The emphasis, however, is likely to be shifted to provide a broad technical background which will serve for many occupations. A general scientific background, supplemented with a wide knowledge of materials, processes, production methods, and general skills will constitute a good foundation on which a variety of occupations can be based. One defect revealed during war production has been the lack of workers with an adequate background to qualify as foremen and supervisors. Specialized and general shops we will

continue to have, but we must keep in mind that a much wider range of experience can be brought into the classroom through the visual aids such as well-prepared training films. Not every process needs actual physical demonstration in the classroom.

A similar shift of emphasis has already been taking place in the field of home economics. Home economics no longer means merely a program of cooking and sewing. Increased emphasis on homemaking, budgeting, consumer education, and nutrition will require changes in our equipment layouts to provide for better multiple use, except in those buildings large enough to require full-time laboratory use of the space.

We have attempted to give students practical experience in democratic government through student councils and various student organizations, particularly in the secondary schools. No provision is usually made for office or meeting space for the officers and committees of these organizations. Space needed to get out the school paper, handle tickets, etc., is seldom provided. These activities are usually shifted from pillar to post. Provision of a utility room for these purposes will constitute a valuable addition to any secondary school.

What changes may we reasonably expect through wider and more efficient use of audio-visual aids? Centralized radio has been growing in use in the educational program. Improvement in programs and in quality of reception through frequency modulation broadcasting will increase its educational value. In some communities cooperative effort in the establishment of an FM broadcasting service for exclusive educational use will add greatly to its value both for day schools and for adult education. It is too early to forecast the extent to which television may be of service to education. We may expect, however, before many years have passed, that it too may be another important string in education's bow. It will become one more valid reason for at least a small auditorium in every school.

The armed forces have brought forcibly to our attention the value of motion pictures in the educative process. Instead of a lecture on booby traps, a film is thrown on the screen. Soldiers are sent into the field to test their knowledge, with K.P. duty as a penalty for any failure to have learned its lesson well. To be sure, the armed forces have had unlimited funds and personnel to create the films specifically designed for each lesson to be taught. As cooperative effort develops better films, a wealth of material will be brought to the classroom from the four corners of the earth.

Particularly in the field of science may we expect changes in method. A good film demonstrating an experiment, easily seen by all, may replace the demonstration by the teacher which only a few may clearly see. Our laboratory procedures may well be subject to intense scrutiny. Instead of laborious time-consuming experiments, we may turn to a procedure of teaching certain selected skills, such as the use of the microscope, the setting up of apparatus, the technique of weighing, measuring, and some dissecting. These learned, may we not come to a time when the class will view on the screen in much clearer form the methods, procedures, and results which will

greatly speed up the learning process? One minor problem will be the extent and method of providing dark shades for our buildings. Those who have considered a shift to window ventilation may question what provision must be made if rooms are to be darkened for considerable periods.

Many of the changes in the educational program and in educational method can be carried forward within the framework of our existing facilities if they are brought to the standard of the best current practice. It will be of equal importance, therefore, in the setting of standards for future buildings, to make a critical evaluation of those standards in the light of our present program and experience. The teachers and principals who work in our buildings can offer a wealth of suggestions based on the shortcomings of our existing facilities in serving our present program. A survey of our maintenance experience will prevent the repetition of many costly mistakes, which do not lie within the scope of this paper. A democratic pattern of capitalizing the experience of an entire school system, coupled with a vision of what education may become, will result in a vastly improved educational program and standards for the facilities which will make that program possible.

Discussion of Preceding Papers

by

JOSEPH L. QUINN, JR.

BOTH of the previous speakers have evidenced considerable thought and mature judgment in the preparation and delivery of their papers. Therefore, I hesitate to attempt to elucidate on any of the points that they have covered so well.

Does anyone wish to ask either of the speakers questions regarding their papers? If not, a few comments on the Indiana situation may be in order.

The administration of new schoolhouse construction in Indiana, because of the many ramifications involved, is different from that in neighboring states. These ramifications in some respects, are based on statutory provisions; in others, on precedent and policy; and in others entirely upon the ethics of the designing professions.

All schools must be constructed in accordance with the Indiana Sanitary School House Law which was originally enacted in 1911, amended in 1913 and 1915, and finally brought up to date in 1933. At the present time a group of architects, engineers, contractors, and craftsmen, in conjunction with a committee from the Architects' Societies, the Engineering Societies, and the Administrative Building Council, are preparing new rules and regulations which will materially simplifiy the administration of this law. The law applies particularly to the physical features of the buildings. To mention only a few, the size of rooms, height of ceilings, type of heating, ventilating, and sanitary facilities are covered in the law and adequate provisions will be made regarding these in the rules and regulations. The materials that will be used in the construction of the buildings will be in accordance with the building rules and regulations, the electrical rules and regulations, the plumbing rules and regulations, and the heating, ventilating, and air conditioning regulations of the Administrative Building Council, which, at the present time, are in the hands of the printer.

By statutory provision, the State Board of Accounts must approve the expenditure of all funds by elected city, county, township, and state officials. The State Board of Accounts mandates that before they will approve the expenditures of any of the various units of government for the construction, alteration, or repair of school buildings, the plans and specifications for the buildings must be approved by the Division of Environmental Sanitation, which is the engineering department of the Indiana State Board of Health, and the State Fire Marshal's Office. It also requires, as well as the 1935 Engineers' Registration Law, and the 1943 amendment to the Architects' Registration Law, that all plans and specifications be certified by either an architect or an engineer registered in the State of Indiana. This is a decided advantage to the procedure in Indiana and eliminates the possibility of unqualified individuals attempting to construct buildings which are

not equal to the standards and which may prove disastrous to the peoples who will later occupy them.

Originally the State of Indiana had a so-called Inspector-Architect. His title was later changed voluntarily to that of State Architect, and he received funds from the Indiana State Board of Health, the State Board of Accounts, the Department of Public Safety, the State Fire Marshal, and the Governor. It was the theory that one office should receive all the plans and specifications and issue approvals accordingly. Many were dissatisfied with the policies and procedures of this office and it was later abandoned after some six or seven years of usage.

Professional men do not feel that any of the state agencies should enter the designing field as they do in other states. They feel that the design of buildings and other structures should be left to the ingenuity of architects and engineers who are following this profession as a livelihood. It must be admitted that their reasoning is sound because, in this day of specialists, men who give their whole life to the design of some particular type of structure are more apt to produce the best in that field of construction.

The state agencies that review the plans and specifications act merely as a clearinghouse and checking agency to see that the designs do not violate the existing statutes and are not grossly in error with standard design or practice.

It has often been said that our neighboring state to the south considers a good argument as the basis for the making of a good horse race. In the past, our schoolhouse construction as advocated by the designers has not always been in accord with the practical aspects advocated by the schoolmen. However, it is assumed in administering this program that these differences of opinion, when "ironed out" in final committee work and concurred in by both educators and designers, will culminate in rules and regulations covering the design, construction, alteration, and repair of public and parochial schools and undoubtedly will lead to better schoolhouses in the State of Indiana.

Trends in Population and Public School Enrollment and Some of Their Economic and Educational Implications

by
T. C. HOLY

Population estimates for the United States. The following table shows the population estimates for the United States by five-year periods from 1935 to 1980, together with the age distribution of those estimates as made by Warren S. Thompson and P. K. Whelpton of the Scripps Foundation for Research in Population Problems.[1]

POPULATION ESTIMATES IN THE UNITED STATES BY FIVE-YEAR PERIODS, 1935-1980

Year	Total in thousands	Index	Percentage distribution according to ages				
			0-4	5-19	20-44	45-64	65 and over
1935....	127,983	100	8.5	28.4	38.6	18.6	5.8
1940....	132,628*	103	8.3	26.4	38.8	20.2	6.3
1945....	137,096	107	8.1	24.3	39.6	20.8	7.1
1950....	141,213	110	7.9	23.0	39.5	21.4	7.9
1955....	144,733	113	7.5	22.7	40.6	22.4	8.9
1960....	147,611	115	7.1	22.2	36.7	23.3	10.0
1965....	149,957	117	6.9	21.4	38.3	24.6	10.9
1970....	151,783	119	6.7	20.6	35.0	25.9	11.9
1975....	153,044	120	6.6	19.9	34.0	26.4	13.1
1980....	153,628	120	6.4	19.6	33.7	25.9	14.4

* The actual census figures for 1940 were 131,669,275, also the actual per cent of the population in the 5-19 age group was 26.4, the same as estimated.

Public school enrollment in Ohio, 1927-1943. The following table shows the public school enrollment in Ohio by grades in 1927, together with index numbers showing the relationship between the 1927 grade enrollments and those for alternate years between 1927 and 1943.

Certain economic and educational implications of these population trends. The National Resources Committee, in a most careful and thorough study entitled *The Problems of a Changing Population*, published in 1938, lists a number of economic influences of the present and predicted trends in population. Among these are the following:

1. The proportion of the total population in the economically productive age classes—20 to 64 years—is expected to rise gradually during the next few decades from slightly over 55 per cent in 1930 to a plateau of about 61 to 63 per cent from 1950 to 1970. Thereafter it will probably decline gradually.

[1] *The Problems of a Changing Population*, National Resources Committee, U. S. Government Printing Office, May, 1938, pp. 24-25. (These predictions are based on the assumption of medium fertility, medium mortality, and no immigration.)

DISTRIBUTION OF OHIO PUBLIC SCHOOL ENROLLMENT FOR CERTAIN YEARS, 1927-1943*

Grades	Enrollment 1927	Index of enrollment by years using 1927 as 100							
		1929	1931	1933	1935	1937	1939	1941	1943
I	145,647	91	101	88	83	81	75	71	75
II	120,534	104	106	100	94	89	86	78	83
III	125,038	96	100	97	91	87	85	78	74
IV	123,783	92	102	96	93	89	82	78	72
V	122,939	96	98	96	95	91	85	81	76
VI	115,972	96	97	99	97	95	90	84	81
VII	109,275	101	105	104	105	105	99	95	92
VIII	93,562	106	110	111	117	114	113	108	101
IX	77,294	114	125	133	136	137	140	135	129
X	57,948	115	132	150	152	163	167	168	154
XI	44,152	110	129	153	166	170	182	191	171
XII	37,379	110	124	151	164	162	186	195	180
Elementary total	956,750	98	102	98	93	93	88	83	81
High school total	216,773	113	127	145	151	155	164	165	153

* The figures exclude the enrollment in kindergarten, special classes, and postgraduate courses.

PERCENTAGES OF FAMILIES LIVING IN CERTAIN TYPES OF SCHOOL DISTRICTS IN OHIO THAT SEND CHILDREN TO THE PUBLIC SCHOOLS

Type of district	Number of districts	Total families	Families with children in school	Percentage of families with children		
				Low	Mean	High
Cities (in the corporation)*	18	86,442	28,824	14	33	52
Exempted villages (in the corporation)	13	9,726	3,324	26	34	45
Rural villages (in the corporation)	44	12,985	4,720	21	36	49
Rural areas (out of the corporation areas of all exempted village and rural districts)	55	16,409	7,321	26	45	60
Totals	93†	135,161	47,871‡	14	35	60

* Cities included in this sampling are Akron, Bellefontaine, Canton, Chillicothe, Cincinnati, Circleville, Columbus, Dayton, Dover, Gallipolis, Jackson, Logan, Salem, Shelby, Toledo, Wilmington, Wooster, and Youngstown.

† The rural areas in many cases are a part of the districts included in the other three categories; hence, the total number of districts is less than the sum of the preceding figures.

‡ The totals exceed the sum of the preceding figures because the reports from some districts did not separate the families living outside the corporation from the others.

2. In 1940 there were 8,410,658 persons over 65 years of age in the United States. By 1980, it is estimated there will be 22,000,000 in this age class. If all those over 65 years then receive cash benefits the taxation for this purpose will be greatly increased.
3. Since the average age of the population is increasing, it follows that the labor supply available in the future will be, on the average, older than in the past. Unless industry will adapt itself to this change, society will be faced with a heavy burden of caring for this large number of older persons.
4. The factor of technological changes brings special problems of adjustment to older workers. Because of this fact, operators of new types of machines will tend to be recruited from the younger ages.

In the *Research Bulletin* of the National Education Association, entitled *Population Trends and Their Educational Implications*, there is a list of the educational implications resulting from population changes. In the following list there are included some from this bulletin. These are supplemented by certain other observations:

1. Decreasing numbers of children to be educated should be used as an opportunity to enrich and improve the educational program.
2. The location and design of new school buildings should be determined after careful studies of existing and probable future trends in the school population at the various educational levels.
3. Guidance services and other appropriate means should be used by schools to adjust educational programs, not only to the great number of children who remain in one locality, but to those in a mobile population who change frequently from one school to another.
4. The probability that the rural areas will be the reservoirs of the future population makes the improvement of rural education a national necessity. Rural education must offer opportunities suitable both for youth who will stay on the farm and for those who will migrate to the cities.
5. The facts with regard to the trends in the population of the United States should be presented at appropriate levels in the educational program.
6. The schools should encourage among both youth and adults the formation of attitudes toward family life and family responsibilities which are socially and individually acceptable, to the general end that the physical and intellectual quality of the future population may be lifted.
7. The movements of population from one area to another within the same state, and from one state or region to another, suggest the importance of increased state and federal participation in financial support for basic educational services.
8. Since many adult citizens are childless or have no children of school age, as shown in Table IV, the interpretation of the schools to the public should emphasize not only the specialized service to the child, but also the general benefits and the civic, social, and economic values of universally effective schooling. Moreover, the schools must find ways of extending their services, such as those in the field of adult education, so that the approximately two thirds of the families without children in the public schools may be brought within its sphere of influence.
9. Despite an expected increase in the total population of the United States, the number of persons in the 5-19 age group is expected to decrease more than 3,000,000 between 1935 and 1950.

10. Although the number of births in 1942 and 1943, amounting to 2,808,996 and 3,200,000 (estimated), respectively, were the highest in the history of the nation, a sharp drop is expected in 1944 and subsequent years. The Metropolitan Life Insurance Company estimates a 15 per cent drop in 1944 over 1943, with the downward trend likely to continue for at least one year after the close of the war. This high birth rate for these two years has important implications for schoolhouse planning.

The Probable Developments in Materials and Construction Methods in the Postwar Period

by

MALCOLM RICE

I HAVE been asked to speak on a subject titled "The Probable Developments in Materials and Construction Methods in the Postwar Period." This title we may assume as applying generally to school buildings.

The actual school building is a relative matter, tied to the aims and objectives of instruction. Materials and construction methods become an integral part in forming the physical background for such aims and objectives.

There has been an excessive welter of words published in magazines and newspapers, predicting a new day, awaiting the end of the war, when marvelous new devices and building materials will revolutionize and perform miracles in our buildings.

There may be a Jules Verne among us who may receive recognition in future generations, but the same facts prevail in this era as they did in his. Had the world at that time accepted his "Nautilus," it could not have been made factual due to the limitations of the age.

Miracle thinking is healthy, and can only do harm in the disappointment it may cause (for the same reasons) when the predicted marvels fail to materialize immediately. There has also recently been much written for the purpose of debunking the miracle forecasting, and the result has been a state of general confusion.

No one can foresee conditions 25 years hence, but we can and should see our responsibility so to construct and use such materials as will make a school at least a safe place of assembly, whether built for 10 or 100 years.

We all realize the tremendous and far-reaching effects that this war has created in our living and thinking, and their bearing upon the physical development of postwar planning and building.

To establish a flexible formula in the guidance of our thinking, known factors must be our starting point in the attempt to solve for X.

Prior to this war, I was once charged with the task of compiling a list of materials used in a federal building erected in Washington, D.C. This compilation was for the purpose of showing what per cent of the states were benefited in their contributions of materials used. The analysis carried beyond this country, into China for hog bristles used in paint brushes, the Malay Straits for tin, the Dutch East Indies for rubber, and so on. It was brought home at that time that our industries were greatly dependent upon foreign trade.

The effects of war have brought this dependence to a sharp halt, and necessity has forced industry into many substitutes and new processing of available materials. It then becomes logical for us at

this time to inquire into the merits of these substitutes and new processes as they may be considered for use in postwar buildings. We find that many of them have proved equal or superior to the original. If this fact is recognized, a determination as to their limitations may be made. We should not expect these new developments suddenly to revolutionize the building industry or to usurp the benefits of reciprocal trade, but they will play their part in opening up new horizons. Combine these advancements with prewar standards, in the light of evolution, and we may presume to establish one of our factors, namely *materials.*

The effects of war established a labor problem that has created mass migration and production. Conversion of industry into peacetime endeavors may tend to stabilize expanded communities by the continuation of mass production. This in turn will develop prefabrication, where raw and finished materials will be assembled into units for erection. If this fact is recognized, we may presume to establish a second factor, namely *time- and labor-saving production methods.*

If we use the elements of factor number 2 in arriving at factor number 3, we are led to recognize that decentralization of large cities has and will presumably continue to occur. Public institutions are financed by taxation; therefore, the source of taxation must be determined so as to establish a purchasing power. It is recognized that, on a per capita and square foot of land basis, the revenue from taxation is less in surburban areas. If this fact is recognized, we may presume to establish a third factor, namely, *that we must purchase more for our dollar in such areas to keep pace with the urban areas.*

With the three elements of materials, production, and purchasing power to work with, what are the objectives in building? Fundamentally, a safe shelter to house student and teacher for the purpose of instruction. This shelter must contain the necessities of human needs, which leads us to inquire into their nature. They may be considered as light, fresh air, controlled temperature, and toilet facilities. Through past centuries these necessities have been met with varying degrees of honesty, using the materials and ingenuity common to the time.

I feel, however, that from about 1900 up until now the equilibrium of our social and scientific developments has been quite out of balance. We have been frankly confused in just how and what to do in the stabilization of this equilibrium.

In this justified confusion the line of least resistance has been so to train ourselves that we have produced the finest structures of our age, using the best of traditional architecture as inspiration, not daring to use materials unless they fitted the pattern of tradition. It has not always been a sign of courage, nor has it met the full challenge in school buildings.

On the verge of our greatest scientific discoveries, and in the throes of a mechanized age, we expect too much in asking that tradition alone throw its mantle over us. Let us rather accept tradition as

it fits, but face our facts and problems with the tools at hand. Only by a charitable but brutally honest comparison of our faults and virtues may we arrive at conclusions. This is a statement for speculation, and we should ask ourselves these questions:

1. Have school sites been selected for the best possible purpose, that such tracts of land may serve the greatest good?

2. Was the school built for the purpose it was intended or for the external gratification of a community or personages?

3. Were materials used that best suited their purpose?

4. Was value received for the taxpayer's money, or have we schools so lavishly constructed that they are not paid for and are now completely outmoded for use in the application of present methods of instruction?

Against these questions apply the following thoughts:

1. A selected site should provide for a physical education program, and the recreational areas should serve community needs. Stress should be placed upon open spaces, fresh air, sunlight, grass, and trees. A small site will not meet these needs.

2. The school building should be built to meet the educational needs and emotional nature of the child. An honest reckoning with your own school days is of benefit.

The child is very quick at discovering a fake, as is illustrated by the fear of a magician in performing before them.

Let us plan our buildings from within, simply, honestly, and without the restraint of so-called "school architecture," using materials and building methods best suited to serve the needs of children and teachers. Honesty and sincerity never rear an ugly head, so we need not fear a building whose external appearance will become offensive.

The postwar will be an indeterminate period of years of stabilization. The first years will be ones of great haste and subsequent errors, followed by gradual adjustments.

We propose to erect buildings during the first stages of this era, risking time, materials, and money. Let us, then, not be too hasty in adopting a building program that will not permit of adjustments. The anticipated life of buildings should be predetermined and materials chosen accordingly. Flexibility of plan arrangements should be most seriously considered in meeting the adjustments in methods of instruction.

I do not advocate temporary construction as the answer, pending a period of stabilization, but the thought does present a point of view, when rigid construction designed to serve over a long period of time is under consideration.

In drafting a program of procedure one may be asked how to go about a practical application of all these generalities.

It would appear that the first consideration should be an intelligent selection of a committee, comprised of persons equipped with open minds and a large bump of horse sense, who are willing to devote their time and energy.

This committee should, at the earliest possible date, select an architect. This selection should be made without fear of favor, and

not necessarily on the basis of how many schools he has designed in the past.

When he is finally selected, give him scope and wholehearted cooperation. Give him the program in the nature of your objectives rather than a site and space dimensions. Solicit his advice on site selection and permit him to assist in the preparation of the program. If you have selected wisely, you will find he will be sympathetic to your particular problems and equally desirous of giving you the benefit of his training and experience. Get him into the picture early.

Much speculation has been indulged in on the subject of postwar building materials, but against such speculation apply the bump of horse sense.

Plastics will not take the place of concrete, steel, stone, and brick. The major elements that have comprised buildings over the past will still continue to serve the future. The building methods that have been proved for generations will also continue to serve the future. The difference will be in the application of materials and methods, in meeting a specification for living.

Glass has been a medium of enclosure and light for generations but its use has been dictated by its limitations. Today we have flexible glass, structural glass, heat-resisting and heat-inviting glass. Methods of processing have given us square yard units of measure instead of square feet. This is not a new material but many of its limitations have been removed. Establish its limitations, call it what you will, but use it if it turns the trick.

The lamination of wood has been a recognized method of obtaining practical and artistic results for generations, but *its* use again has been dictated by its limitations.

Today we have laminated wood products and methods of fabrication that have expanded its application from the cabinet worker's bench to structural trusses and airplane wings. The materials and methods used are basically the same as in the days of the French kings. It amounts to wood surfaces brought together under pressure and heat, and held together with an adhesive agency. The art of lamination has progressed over many generations on the path of trial and error.

The expanded usage of the so-called plywood has been made possible to a large degree by the scientific development of glue and its application.

One of the by-products of the soybean in the processing of albumin glue has been contributed. Codfish, animal bone, soda ash, animal blood, milk, resin, and the cassava root have been some of the ingredients of experimentation, out of which an adhesive agency has evolved, placing laminated woods in the field of external and structural use.

One of the technical difficulties in the past has been uniformity in the application of heat in making up laminations. This difficulty is now being successfully overcome by the use of radio frequency heat, which assures a uniform temperature throughout the wood assembly. The assurance of uniform temperature is of vital importance in the

curing of laminated wood under compression, in high density products.

All of this sums up to the gradual, plus an accelerated, development of a product used for generations. Its measurements are now gauged by the square yard, rather than the square inch. Its usages have been extended to large surfaces, both internal and external. It lends itself to dry wall construction and fast erection, and is an agency in the surge towards prefabrication.

This is not a new material but many of its limitations have been removed. Establish its limitations, call it what you will, but use it if it turns the trick. Apply these illustrations to all of our building materials and you will find that a basis of flexibility and new horizons may be established, not on fantasy, but on good common sense.

There are two words in usage applied to men's thinking and actions, both of which serve a purpose in maintaining a balance.

One is "conservatism," the other "radicalism." The died-in-the-wool conservatist hides in the folds of the past and assumes the slogan that "what was good for his forefathers is good for him." The true radical usually "goes off the deep end" in disclaiming this creed, resulting in an appeal for the conservatist to pull him out.

In the consideration of materials and construction methods, it is far safer to keep on the conservative side and let someone else be the guinea pig. In the case of postwar decisions, let us not forget, however, that our war construction has itself been in many cases the guinea pig. I have no doubt that full data on the success and failures of materials and construction methods used will be made available to us from the proper sources.

The time to become radical is when a full recognition is accepted that past standards do not meet present and future requirements, or when new methods permit of greater efficiency. Be cautious, but not timid, when you arrive at these conclusions, and stand by the courage of your convictions.

Gain your objective by simplicity of form and color, invite the outside into your classrooms, and take every advantage of the tools at hand.

I am convinced that this state of evolution will lead us away from useless, superficial architecture, plus the recent horrors of modern soapbox architecture which has been applied to whimsical, immature planning.

I am further convinced that the recent scientific processing of standard materials will contribute in a large measure in the development of a logical and honest expression of true American architecture in the full sense of the word.

Discussion

by

WARREN D. MILLER

AFTER listening to Mr. Rice's very sound talk, I wish to use his own term—it certainly is based on "horse sense."

It is difficult for me, as a practicing architect, to bring about any serious discussion, as I so thoroughly agree with his talk relative to all major points.

In my own opinion, much slowing up in postwar planning is due to certain magazine articles, including architectural, which have been written solely to fill up space. Possibly they have some basis for fact, but they certainly have confused the public. This is particularly true in the field of home building.

We have several potential clients who desire to have their drawings and specifications prepared, but they all feel that they wish to wait, as they have been sold the idea that new methods, materials, etc., will be available at the end of the war.

As Mr. Rice stated, we must rely on brick, concrete, steel, glass, old tried and proved materials. Beyond doubt, new methods, finishes, accessories, etc., are in the stage of development, but it will take time to get them on the market.

The new State Building Code, which covers minimum rules and regulations, has just been promulgated. Certain definite standards, formerly set up, have been modified and much is now left to the discretion of the school authorities and their architects and engineers.

The four questions Mr. Rice suggested we ask ourselves, I believe are worth discussion.

1. I believe the site should be given most careful consideration.

2. I believe that the school is not necessarily for the external gratification of the community, but an attractive one should not add to the cost if judgment is used. Many times the basbetball court and seating capacity are overemphasized.

3. Materials should be given much thought and consideration. I believe, where possible, material peculiar to the community should be used.

4. I do not believe school buildings in general are lavishly constructed.

Our state law permits bond issues—15 to 20 years—and since a school must be built under a bond issue, it certainly should outlast it. Many new materials and ideas will be promoted during the bond issue period, as is true in the mechanical field also. Therefore, the school building may be a little antiquated after several years. However, I imagine this will continue through the generations.

Mr. Rice's ideas relative to materials are sane and sound. No one knows exactly what the developments will be in the next few

years. However, we do know that we cannot support a building with sky-hooks.

I believe much more attention will be given to insulation, acoustical material, color, simplicity of design, with thought given to need for change in the building. More thought will be given to mass physical training, and at the same time an attempt will be made to get a dollar's worth of building for each dollar spent.

An architect should be given ample time for study and restudy of a problem, because changes cost much less on paper than in the building later.

I think Mr. Rice is very right about not being too conservative or too radical. We should be cautious and attempt to hit the middle of the road in solving our problems. No one desires to be a party to the construction of a particular building that in a few years he would like to disown.

I believe, if we confine our efforts to straightforward and practical solutions and lay off the tricky effects, the finished product will stand the test of time. The result will not then be a type of architecture, such as was done in the glorious 90's when what might be called the bathtub renaissance period of American architecture left its marks over the entire country.

The Significance of Planning for the Postwar Period

by

HENRY LESTER SMITH

POSTWAR planning is based on:

1. A knowledge and appreciation of historical past.
2. Accumulated personal experience.
3. Analysis of facts and significance of trends.
4. Exercise of imagination in projecting a future condition, need, and appropriate plan.
5. Exchange of action and modification of ideas.
6. Periods of quiet contemplation of relationships existing within the total pattern thus evolved.

Planning must be definite and yet flexible. It might be so gripping as to condition one absolutely to the conceived plan and thus effectively blind one to essential adjustments. Moreover, it involves not only reaching a goal but avoiding undesirable by-products.

It is significant that postwar planning shows development of the critical faculty—a realization of the need for an evaluation of present work and the seeking of higher levels. This is a period of self-appraisal of education forces and recognition of the opportunity to make significent and radical changes. We are not going at planning blindly or haphazardly, but are basing plans on past experience and on careful research into actual facts and prevailing trends. We are breaking away from the tendency to live and plan too exclusively in the present. Traditional ways have had a hard jolt, but we need jolts to bounce us out of long-time ruts. Once bounced out, it is easier to avoid getting back in than it was to break out.

Planning is significant, but not as much so as the fact that the plans on the whole are getting down to fundamentals, to philosophical bases; to what is morally true and humanly needful—not only to *clarity* of objectives but also to *quality* of objectives.

We are tending to see past the necessary military short-term goals to the long-term cultural objectives. The planning is motivated with the determination to lay hold of some of the ideals and values that have heretofore been merely visioned. We are hoping to catch up with some of our dreams. We are beginning to see more clearly the need for and place of vocational education, and to see this need in the perspective of teaching how to live fully as efficient and cultured citizens.

The fact of our planning gives evidence that we have learned how good things—high quality values—can be lost. They can be forcefully taken from us or can be lost through neglect or through setting our affections on low-grade things. We are reaching out in plans to the various sources of society's wealth—natural resources, technological resources, capital wealth, human resources, and institutional resources. And we are beginning to see that the hardest problems in adjustment

will not be in the economic field—employment, living, security—but in the adjustment to one's fellows.

The plans recognize some heretofore neglected areas, such as women's work, rural school needs, minority groups, world peace, etc. It is significant that "human erosion" is noted and that "human conservation" is held up as an ideal.

We are recognizing that good, healthy, vigorous manpower is a vital asset in a democracy, and there is determination in postwar planning to develop and conserve this vital asset through greater attention to physical, mental, and spiritual health. It is being increasingly recognized that plans for betterment and for methods of improvement must be sought and desired by the individual, not arbitrarily imposed upon him.

In the approach to the solution of postwar social problems, the crux of the matter is now more fully recognized as moral and psychological. It is significant that we have called into postwar planning the best men and women leaders of the country—the best minds and hearts in all walks of life and in all areas of activity—as problem-solving leaders, to find a better way of life for all. In postwar plans education stands high. There is emerging a strong effort to maintain a continuing supply of teachers carefully selected, adequately trained, and adequately paid. It means much that the planning includes the ideal of a country giving all youths everywhere in the land an opportunity to get a good education; that there shall never again be forgotten and neglected young people coming out of neglected and forgotten areas.

In the postwar planning it is clear that there is full intention to take adequate care of war veterans; to see to it that special educational opportunities, financial help, vocational guidance, and special counseling be provided for every man or woman discharged from service. There is determination that demobilization shall not mean demoralization.

It is noteworthy, also, that there is determination in recent planning that if the schools of the future are to be used in any way as instruments of national policy, that policy must be democratically sound and morally good.

All the above trends, if they are carefully and adequately directed to fruition, must have a definite and an accumulative significance in relation to the problems being considered by this group. Some plans call for an immediate plant expansion to meet immediate needs; others call for a long-term program of expansion and adaptation.

The expansion and adaptation in educational programs will be reflected in the building field. In many school systems, both large and small, there will be need for additional space to take care of added courses and teaching personnel. This will involve the buying of sites and the selecting and purchasing of added equipment. In turn, this expansion will require a larger engineering and custodial staff. All such expansion will call for an increased budget involving additional taxes. All in all, the problem is one showing increasing needs and increasing complexity; and it requires an increased carefulness in

planning in order to be able to meet adequately the present-day social demands.

These changes will occur in specific localities but building needs should not be supplied only on a local basis. New buildings and modifications of existing ones should be determined on community, regional, and even state-wide bases to prevent placement and provisions that may ultimately hamper the implementation of an expanding and clarifying vision of increasing comprehension.

Financing the Postwar School Construction Program

by

JOHN W. LEWIS

ONE of the fundamental questions involved in financing postwar school building construction is the amount of such construction to be financed. Need is a relative term, modified in no small degree by the conditions of financing. If the building program were to be financed entirely by local funds, the so-called "need" would be relatively small. If financed entirely by federal funds, the need for schools would mount to almost unlimited totals. Somewhere between the two extremes lies a truer picture of actual need. An estimated need of two and one-half billion dollars for school building construction in the five-year period following the war (or approximately $500,000,000 per year) appears to be a reasonable approximation.

The second factor to be considered is the probable financial position of the local community in the postwar period. It is true that local communities now appear to be in an excellent position. Tax collections are excellent and, in general, schools appear to have reasonably adequate revenues to meet the demands of currene higher operation costs. One important factor to be noted, however, is that schools are accumulating large backlogs of deferred maintenance. Labor and materials have not been available in most communities to keep buildings in an adequate state of repair. Replacement of items of equipment, such as typewriters, has been postponed because these items have not been available. Higher operating costs and other considerations have prevented most communities from building up a deferred maintenance reserve. Such deferred maintenance will constitute a heavy demand on postwar educational operating budgets.

Many communities having the greatest need for new school buildings will be least able to afford them. Even in more favored communities, which might be better able to afford new buildings, there will be a reluctance to issue bonds, the interest and sinking funds for which would cut in heavily on money needed for operating budgets. This will be true especially in view of the probable vociferous demands for lower taxes which will undoubtedly follow the first recession from the present high level of business activity. Psychologically, most communities will not be ready for heavy investment of local funds without outside subsidy, even if all conditions are satisfactory. There is a general feeling that subsidies will become available, and the natural reaction will be to wait for such subsidies. The general picture, therefore, is not bright for an adequate school building program financed by local funds.

The third factor to be considered is the financial position of the states. Most states have had the problem of surplus financing. The high level of business activity has brought substantial surpluses to the majority of the states. Where such surpluses have been used to reduce

state debt or are being held for use in postwar reconstruction, the picture will be much more favorable than in those states where the surplus has been dissipated by extravagance or by tax reductions. Those states which have followed a wise fiscal policy of retaining tax rates with resulting surpluses will be in an extremely favorable position for participation in the postwar construction program. Psychological factors will operate in the state as well as in the local community to delay construction programs awaiting a federal subsidy.

The fourth important factor will be the financial position of the federal government. At first thought this would appear to be unfavorable. Already the national debt has passed limits undreamed of in former years, and is approximately 190 billion dollars. No one can forecast to what astronomical figures the debt will mount before the war ends. Undoubtedly there will be loud cries against further federal expenditures for any and all purposes. Viewed from another angle, however, the federal government will be called on to provide subsidies for a works program, not in spite of the huge debt, but because it is so large. If the federal government is to reduce its debt or even carry it, a high level of business activity must be maintained. Under such circumstances we cannot afford another depression or any program whose character is deflationary. Inflation rather than deflation will be the order of the day. To pay off any substantial portion of the debt will be difficult if the dollar retains its present value. To pay it off at a lower price level, when the dollar would be worth twice as much, would be impossible.

This brings us to a consideration of those factors which are tied up with the general economic pattern in the postwar period. The financial position at the federal, state, and local level will be vitally affected by the health and vigor of our economic structure. If we solve our fundamental economic problems, achieve reasonably full employment, and keep our machines turning, we will build up a national income and a general prosperity which will make the financing of education, both for capital outlay and for current expense, a relatively simple matter. If, on the other hand, we go into another economic tailspin and head towards a depression, which in the absence of corrective measures may approach a state of economic stagnation, sources of revenue will dry up. Starvation educational budgets, which we knew only too well in the early thirties, will again curtail all educational expenditures. Because these general economic factors are fundamental to any consideration of postwar finance, each schoolman must achieve a broad understanding of the essential principles involved. While it is not the responsibility of the school administrator to solve these problems, we have a responsibility of cooperating with various measures taken for their solution. Only as we understand the problem will we be able to hazard an intelligent judgment as to whether we are safely on our way or are heading toward the rocks.

What are these problems which we will be called upon to solve? Essentially they are problems involved in achieving and maintaining full employment. As of the end of 1943 it was estimated that the active working force of this country approximated 62,500,000 persons,

of whom approximately 11,000,000 are in the armed services and about 27,000,000 engaged in the production of war goods and services. In other words, war activities absorb around 60 per cent of our effective working forces, leaving only 24,500,000 employed in the production of civilian goods and services.

If the war is over by 1946, and we are to give full employment to all who want to work, it has been estimated that we must furnish 56,000,000 civilian jobs—10,000,000 more than were available in 1940. One question is, how are we to find a market and sufficient purchasing power to absorb all the goods and services which 56,000,000 persons working at high efficiency, can produce? If we do not achieve full employment, and, as estimated, 60 per cent of the population can produce enough for all, how will the remaining 40 per cent get the purchasing power to buy what has been produced for them?

Through most of our economic history full employment has been achieved through a geometrical growth of our capital plant. Profit and interest not needed for consumer goods have been put out in purchasing power in the expansion of our industrial plant. If we can continue, as in the past, to expand our capital plant at a rate sufficiently high to employ these surplus funds, we can probably achieve full employment. The backlog of consumer demand and the initial spurt of tooling up for this new production will probably give us prosperity for a time, even in the face of considerable unemployment, but the essential question is how far and at what rate can this expansion continue.

It is on this question that we have two opposing points of view. One's economic philosophy is determined by his answer to this question. One group contends that the possibilities of capital expansion and the rate of this expansion are unlimited. All that is needed is to return to the era of rugged individualism, get the government out of business and give business its head. The second group contends that, while there will be capital expansion, it will be at a much slower rate. They contend that we went into the depression in 1929 because the opportunities for the profitable investment of funds in new capital enterprise were less than the amount available for such investment, and that, accordingly, we had produced more than we had provided effective purchasing power to buy. They contend further that business did have its head, with little governmental interference, when we hit the skids in 1929, and believe further that, after any initial spurt, the same factors will operate again to head us to disaster. This group believes that business left to itself will not be able to control itself to solve the problem of full employment. It believes that this problem must be solved by the government's stepping in to do what business cannot do for itself.

Among the measures advocated by the second group is a federal program of public works to stimulate employment as it begins to slacken. The first group, in turn, points to the extravagance and inefficiency of the various governmental programs. Their opponents, in turn, reply that even with poor and wasteful administration we are still better off. It is better, they say, to produce at 100 per cent

and waste 15 per cent than to produce at 50 per cent and waste nothing. No matter how efficient an individual industry, they state, the total economic situation is wasteful and inefficient in the idleness of men and machines.

In view of the above, what are the prospects for a sound economic program on which we can base our program for school finance? No one can answer in terms of any given period of time. These answers are bound up with various political trends, and it must be confessed that our standard of civic intelligence is not too high on economic problems. Many of our immediate answers will be given by our prejudices and not by our brains. England, which has been 30 years ahead of us in social legislation, is committed, postwar, to the program of governmental responsibility to achieve economic prosperity and full employment. At the risk of "sticking out my neck," I will predict that soon or late, efficiently administered or inefficiently administered, we will arrive at a similar conclusion. We may have to go through a period of suffering, however, before we will be convinced of its necessity. Even before we are convinced one way or the other, I predict that the pattern of a governmental works program will be tried again, regardless of which point of view is held by those in power. The excuse given may be only that of tiding us over the period of readjustment, but whatever the reason, such a program seems to be in the offing, definitely enough for us to plan on it for postwar school building construction.

The financing of postwar school building construction should be based on the participation of the local, state, and federal governments. We should strive for a percentage participation of approximately 50 per cent federal, 25 per cent state, and 25 per cent local. The larger federal percentage is based on the fact that the federal government has pre-empted the best sources of revenue.

The smaller the local contribution the larger the number of communities which will be able to afford needed construction. It is often held that smaller communities are relatively less able to meet their share of construction costs than are the larger cities. The plight of the larger cities, particularly where a relatively small portion of the budget comes from state sources, is becoming more acute. Many of the cities have already exceeded their safe borrowing limit. Population is moving to suburban areas to escape high taxes, and the cities are rotting at the core. Assessed valuations are dropping, high interest and sinking fund requirements eat heavily into revenue which should go to operating budgets. The property tax, the principal source of local revenue, has been pushed upward to the breaking point. To embark upon heavy local expenditure for new construction under these circumstances would be ruinous to many communities, both large and small.

To assure construction in communities which need it most, without regard to their ability to pay, some may press for larger federal grants. We must keep in mind, however, that the purpose of federal grants will not be primarily to aid education but to create employment. However, such grants will constitute aid to education in a form least likely to raise objections.

Another postwar problem which may have a profound effect on educational finance is the disposal of postwar surpluses of material and equipment. Estimates of the probable value of this surplus run as high as $75,000,000,000. The quantity and variety of these items are almost unlimited, everything from applesauce to zerone, with all the intermediates. For proposed vocational schools the supply of machine tools and hand tools will be beyond our dreams. Other items of direct use to schools would be (to mention a few) furniture, kitchen equipment, laboratory furniture and equipment, audio-visual equipment, shop equipment of all kinds, typewriters and office machines, and supplies of all types.

Manufacturers are concerned lest this equipment, some of it new and never uncrated, fall into the hands of speculators at giveaway prices to be resold at handsome prices, still low enough to disrupt the market. Some of the trade associations are urging that such items which can be used by schools be donated to schools, which are tax-supported. The Machine Tool Manufacturers are among those who have already gone on record in favor of such a proposal. The large manufacturers are realists and understand that schools could not afford to buy much of this equipment in any event. To give a large school system 100 duplicating machines might kill the sale of four or five machines; this number dumped on the open market would kill the sale of 100 machines.

At present, state and local government agencies may purchase surplus commodities at the same prices charged to the federal government agencies. Such prices generally reflect almost the current market value of the item. What is not sold on a negotiated basis is then offered on a competitive bid basis. If this policy is continued in the postwar period, very little of this material will find its way into schools.

If, however, a program of donations to tax-supported schools, or sales made to them at nominal prices, is inaugurated, the effect on school finance will be exceedingly great. In the first place it will release funds which otherwise would have to be spent for replacement of much obsolete equipment or for equipment for additions to the educational program. In the second place, it will reduce the cost of war construction and of equipment for new buildings to the extent that such materials and equipment are available.

An advisory committee of the U. S. Office of Education has already made such a recommendation. To be effective, the necessary sentiment for legislation must be created. Experience of the last war indicated that on the average the government realized only five cents on the dollar on surplus equipment, and part of that five cents went for the cost of selling. What better way of taking part of the surplus off the market, and of assisting the problem of school finance, than to give it to the schools?

Joint participation in the financing of new construction naturally raises the question of control by the federal, state, and local governments. We must face squarely the fact that more recent participation of the federal government in school construction under the Lanham Act has in actual effect controlled the educational program, since the program is definitely hobbled by inadequate building stand-

ards. It may be that in the emergency such controls could be justified as a war measure designed to save critical materials and manpower. To continue a policy of setting a maximum cost per room, as has been done on some Lanham Act construction ($10,000 per room to include building, site, equipment, and architectural service), would result in many communities building substandard structures, poorly designed and equipped for the educational program to be conducted in them. Auditoriums and gymnasiums or any special features designed to enrich the educational offerings would be banned by any inadequate limit of cost. The control by the federal government should be limited to a check on minimum standards of construction and safety.

If the state is to participate in the financing of school construction, it will undoubtedly insist on certain controls which will be designed to prevent waste of its funds. Part of such control might well consist in its insistence on consolidations and reorganization of administrative units to provide better educational facilities and programs without excessive duplication and waste. The state might also exercise control over a larger number of standards of construction than the federal government to insure that buildings meet certain state minimums for the educational program. By maintaining an adequate technical staff the state, by means of advice and consultation, might render invaluable aid to the local community, and for which the local community does not have adequate or qualified personnel.

The responsibility for planning and determining standards above the minimum should be that of the local community. While education is a state function, the development of local responsibility, interest, and participation has been shown by experience to be invaluable. As far as consistent, this should be preserved, subject only to the larger interest of the state as outlined above. Extreme localism, however, which has often been a curse on education, must give way to the over-all pattern in the interest of a better state program.

We have sketched some of the circumstances and factors which will enter into any plan for financing of postwar school construction. We must not overlook one important element—the support of public opinion. No matter how favorable the financial factors may be, no matter how convinced the educational administrator may be, as to the need of construction, we will get no further in the financing of education than the public believes we should go. A program of education must rest upon the foundation of an enlightened public opinion. If we have not sold our program to the public, if the public does not demand higher standards and facilities, if the taxpayer is not convinced that we can afford them—and, in fact, cannot afford to do without them—we will have difficulty in setting up an adequate program of finance.

The voters of today have been in our schools, the voters of tomorrow are in them now. Our survival at a level of adequate finance depends on how we are able to instill in them a keen desire for the best education we can afford. It is our only insurance of survival in a topsy-turvy world where our technology has outdistanced our means of intelligent democratic control.

Discussion of the Financial Problem as It Relates Particularly to Indiana

by

OTTO K. JENSEN

I HAVE been asked to discuss the paper of Mr. Lewis on "Financing the Postwar School Construction Program," with particular emphasis on the financial problem as it relates especially to Indiana.

I can agree with much that Mr. Lewis has said and particularly with his discussion of need for construction. He says that "need is a relative term, modified in no small degree by the conditions of financing. If the building program were to be financed entirely by local funds, the so-called 'need' would be relatively smaller; if financed entirely by federal funds the need for schools would mount to almost unlimited totals. Somewhere between the two extremes lies a truer picture of actual need."

I have seen quoted in the newspaper that it is estimated by certain school officials that Indiana schools need a school construction program that will total $200,000,000 over a five-year period. This amount is in excess of the $85,000,000 maximum bonding power of the school corporations of Indiana. There is now outstanding in school bonds approximately $30,000,000 which would indicate $55,000,000 of additional bonding power.

Published statements show that the state has a balance in excess of $43,000,000; this, while true, will lead to serious consequences unless the spending instincts of selfish groups are met with stern refusal.

When careful consideration is given to the positive need and certain obligations of the state itself, this balance shrinks to a very nominal figure—less even than prudent management of the state's business would require. A considerable portion of this balance is the result of necessarily deferring the improvements, expansions, and equipment sorely needed in the penal, benevolent, and correctional institutions of the state. This is the state's first obligation, and there is much of it to be done. The state's only "must" program is sufficiently urgent and involves such large expenditures of money to be made as quickly as possible after the war that it is incumbent upon us to guard this balance and augment it if possible.

The fact that the state is already doing a magnificent job to support local schools would seem to me to preclude the probability of considering any additional grants for construction projects, at least until after the state has fulfilled its own obligation.

Indiana is a large war production center and will probably undergo some shifts in population which will materially affect the school building needs of some localities. Wherever a building project is to be financed by local taxation, prudence would dictate a delay in the actual undertaking until after the necessities can be more

accurately determined. Of course, if federal grants are made available in sufficient amounts, the program could then be modified.

It is a concern of mine that units with the greatest need for building construction are those that have no bonding power. This certainly requires consideration of further consolidation of units, or of our taxing structure, in order that the per capita wealth back of each school child may be more nearly equalized.

While we are on this subject, I would like to give a thought that I have been entertaining for some time and that is that it would be wise to have our laws amended so as to permit one school fund for operation rather than the two or three which we now have. You, of course, are familiar with the fact that the tax rate for operation of schools is under tax limitation and that the rate for indebtedness is not under limitation.

The conclusion seemingly reached in Mr. Lewis' address is based upon local, state, and federal government participation in postwar school construction. The approximate percentage of participation would be: federal, 50 per cent; state, 25 per cent; and local, 25 per cent. The larger federal percentage is based on the fact that the federal government has pre-empted the best sources of revenue. Any participation in Indiana in the program of school construction would be limited to existing laws unless or until new statutes were passed.

Indiana's participation during the '30's, with WPA and PWA projects was not an entire success. It has been my experience that those projects financed by PWA were more satisfactory from a financial viewpoint than the projects financed by WPA.

I strongly urge that any heavy construction, if it is to be done with federal participation, be done on a contract basis so that the local unit knows exactly what the costs are to be. The Indiana system of budgets and taxes for current need only does not contemplate the accumulation of surplus by local units. I am of the opinion that legislation should be requested that would permit local units to create building reserves.

There is one other feature of Mr. Lewis' address that I think you might well heed and that deals with the disposal of war surplus, with particular emphasis upon the disposal to units of government for use rather than the adoption of a plan of placing the war surpluses on the market for resale.

I am in hopes that whatever construction programs are undertaken by school corporations in Indiana will be done after careful and serious consultation with the building council, the board of health, and the fire marshal's office, and that expert advice will be sought covering the question of location, types, etc.

Let us, in Indiana, endeavor to overcome the sentiment of extreme localism.

Informal Conference on the Functional Planning of Facilities

Group I

PHYSICAL AND HEALTH EDUCATION AND RECREATION

Discussion Leaders:

W. W. Patty, Director of Physical Welfare Training, Indiana University
H. R. Davidson, Superintendent of New Albany City Schools
Malcolm Rice, Coordinator of Postwar Building Program, Indiana University

The Chairman introduced several of those present, according to the professions represented—architects, superintendents of schools, principals of large high schools, physical education directors.

Mr. Davidson submitted two questions: "Have you had experience with providing dressing room lockers only in the dressing rooms, and having separate lockers for the gym suits?" He stated that it is almost impossible to have storage space for students for everything. The other question was, "How many of you own and operate your own laundries?"

Several expressed the opinion that separate lockers for gym suits were more satisfactory.

Architect John Leonard Hamilton, of Chicago, pointed out that, unless one could install good equipment in a laundry and have enough work to keep it busy all the time, it would not pay to have the school laundry.

Dr. Bookwalter, of Indiana University, stated that, if uniforms as well as towels were furnished to the students, there would be no question as to the possibility of keeping a laundry busy.

Dr. Patty said that at Riley High School, of South Bend, they have had that system in operation at least 15 years. Also Adams High, in that city, has its own laundry. It has been found that the cost is about $1.25 per semester per student. Since they have a daily program of physical education exercises, they furnish clean uniforms and towels daily, five days a week. The $1.25 per semester at Riley High School includes the cost of the uniform and a clean towel each day for each student. Adams High School has about the same number of pupils—about 1,500 to 2,000.

Dr. Patty asked what would be the estimate of the cost of a laundry.

Mr. Davidson said that a used unit could be bought for about $500. Most of the schools use small washing machines and have a rather inadequate lot of equipment.

The Chairman raised the question as to why there is so seldom an architectural plan for locker space and facilities for the younger children. He brought out that, when the pupils take showers, finish-

ing with a cold shower and a brisk rubdown with clean towels, the danger of catching colds is reduced.

Architect C. W. Sullivan, of Cincinnati, Ohio, said that many schools have these facilities for the younger children, but that the lower grades seldom use them. It seems that there is no one to supervise the pupils below about the fourth grade.

Dr. Bookwalter said that there are three contributing factors that tend to prevent the use of showers in the lower grades: (1) They do not have a trained teacher or anyone else who is in charge of these children; (2) it is impossible to shower and get the children dressed and active in the length of time they have to spend; (3) the room teacher does not have time to supervise them. Also mixed classes present another problem.

Dr. Patty pointed out that the parents, for the most part, send their children to school in the morning clean and neat, and that by the end of the day they present a very different appearance. He expressed the opinion that the parents would be glad to have the facilities for cleanliness used, even if it took more time than is allotted at present. He said that he saw the fourth and fifth grade boys at Lincoln School in South Bend just coming out of the showers, and that he believed if the school boards over the state could have seen these little dripping boys coming out of there, and could have seen them after their brisk rubdown with a clean towel, he didn't see how any official in the state could deny them such a privilege. They go back to classes more efficient.

The Chairman asked for discussion on which was preferable for girls—individual or group showers—saying that from the standpoint of cost, group showers were preferable.

Dr. Bookwalter said that in the University School there are about 25 per cent of the showers of the individual type and 75 per cent group showers; that the group showers are more satisfactory; that the individual showers are not often used.

Mr. R. J. Brocker, architect and engineer of Greensburg, Pennsylvania, stated that the girls prefer the gang showers in the gymnasium at Greensburg. The women teachers of physical education who were present corroborated this point of view.

The consensus was that when students have physical disabilities they prefer the individual showers, and that there should always be a few of these for use, but that arrangements should be made for the majority of the pupils to use the gang or group showers.

Dr. Patty asked about the furnishing of towels—whether they were paid for by the taxpayers or by student assessments.

Mr. Haworth, of Kokomo, said that the taxpayers of his city furnish the towels.

Mr. Neff, of Cannelton, stated that in his school there is a 25 cents per semester assessment per student for use of the towels.

Dr. Patty stated that here the cost of laundering towels has been increased; that it is now about 1¼ cents each, in large quantity lots.

It was stated that most school boards will furnish soap for the showers but not the towels; and that the fee usually does not take

care of all the expense; therefore, boards of education should provide for a supplementary fund.

The Chairman next called for a discussion concerning the kind of building needed.

Mr. Rice, I.U. Coordinator of Postwar Building, said that he would like to hear a discussion of swimming pools and control of swimming pools, and also a discussion of gymnasium floors, since they play quite a part in the design of any of our gymnasiums. They should be constructed so as to be suitable for the work to be done at any particular school. The interest of the group seemed to be greater along the line of gymnasium floors, so that was the topic first discussed.

Mr. Rice described a gymnasium built at Yale University which had cost about $6,000,000 and which had a wooden floor large enough to accommodate two games of tennis at once. The floor was built on the ground, over 90 feet of sand, and the water level was about 15 to 18 feet below the floor, which was constructed as follows:

On top of a 3-inch stone-concrete sub-slab was put 5-ply membrane waterproofing turned up on the edges to make a complete water seal. On top of that was put a 5-inch reinforced stone-concrete slab; on that was put stone-concrete fill, in which were imbedded the sleepers. The sleepers were 3 x 3-inch chestnut, and the wood was impregnated and painted with creosote. The sleepers projected beyond the surface of the stone-concrete fill, which left an airspace. On top of the sleepers was the subfloor. On top of the subfloor building paper was laid to take the squeak out of the floor. On top of that was put first quality maple flooring, 3/16 of an inch thick by 2½ inches wide. This was all kept away from the perimeter walls by a 2-inch space, to permit expansion and contraction of the floor; and to cover up the joint a 2 x 3-inch steel cover angle was used.

The floor was laid correctly, and was considered fool-proof when it was built, in 1929. Then, when the building was taken over at the beginning of the war by the Commando Forces of the Army Air Corps, high barriers were constructed at different points on the floor and the cadets were trained to jump over these high barricades. After such hard use for some time the floor gave way in places and dry rot was found to have destroyed a part of the subflooring.

Architect Sullivan said he would have thought the above described floor was built so that dry rot should not have occurred.

He has tried wood blocks set in mastic, but this type of floor will not give, and the architects will hear objections from the athletes and coaches.

Architect Rice said that he knew of a school where a floor had been made of blocks laid on coal mastic and floated, but that it had buckled. The trouble was that the school had been closed in the summer and dampness had accumulated. The windows should have been opened and precautions taken against such an occurrence. When the windows were opened and the room was dried out, the floor went back into place again. This is a maintenance problem for the school authorities. But Architect Rice said he could never be talked into

laying a floor on the ground again, because there will always be trouble when the water level rises 6 to 9 feet below the surface.

Architect Sullivan told of a wood block floor laid in mastic. The floor was laid in winter time, and there was a great deal of expansion in summer, which caused the floor to buckle. However, they took out about 4 inches all around the 82 x 88-foot gymnasium and the next year they did not have that trouble. People were very well satisfied with the floor. It does not have a desirable resilience, but is very satisfactory.

Architect Brocker described a job in which the floor was laid over sleepers anchored with bulldog clips, with straight sheathing on top, and on top of that they laid the gymnasium floor. This has given no trouble for the 16 years since it has been laid. Recently a part of the basement was flooded and the water came in. When some of the floor was taken up no evidence of dry rot was found. They had put two coats of asphalt on the sleepers before putting them in place.

The question was raised as to whether or not floors anchored by bulldog clips would squeak. Some present held that this could not be prevented, but others, among them Architect Brocker, stated that by the use of large-sized bulldog clips there would be no squeaking.

Superintendent Haworth told of the construction of a floor for the gymnasium in a high school building constructed in 1913 when "we were perhaps in the dark ages." It was built on the side of a creek bank on 15 feet of blue clay. First there was laid 3 inches of asphalt, then a 5-inch layer of concrete. On this were put the sleepers, and then double floors were laid. This has stood for 30 years with no rot except where a water pipe leaked. If you have air under the floor you will not have dry rot to contend with.

Dr. Patty closed the discussion because the time was up, but it was agreed that there were so many other interesting points that they hoped to get together again to finish the discussions.

MUSIC EDUCATION

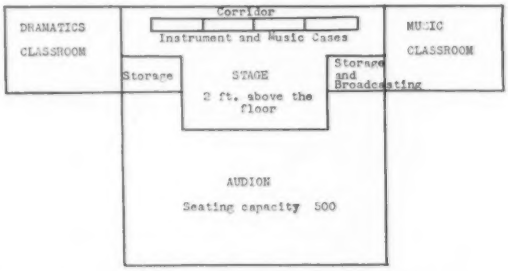
Discussion Leaders:

S. T. Burns, Professor of Public School Music, Indiana University
Ralph W. Wright, Director of Music, Indianapolis Public Schools
Alvin M. Strauss, Architect, Fort Wayne

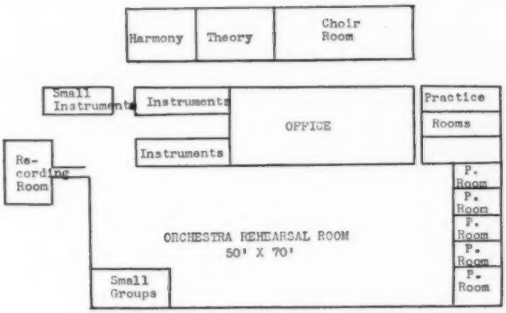
The panel discussion was opened by Mr. Burns. A short speech was presented and various points for discussion set forth. The three main points which Mr. Burns discussed were (1) the nature of the median, (2) variety of the organizations, and (3) experiences and schooling. In discussing the first point, Mr. Burns commented that sound won't stay in one place; that it spreads. Consequently music rooms must be built differently from the ordinary classroom. Sound blending is difficult. As an example, this illustration was given: in a certain school the acoustics were so poor that it was necessary for the pianist to have her back to the conductor in order that the piano might be heard. In this room also the choruses sounded continually off key.

Variety of types was the next topic brought up by Mr. Burns. He gave the following as examples: the powerful type, bands; medium type, the large chorus; small, intimate type, the string ensemble or small chorus. Mr. Burns mentioned also classes in theory, piano, and movement and rhythm. The ideal large school should have a band room accommodating at least 90, an orchestra room for 60 to 90 people, several ensemble rooms, several individual practice rooms, a choral room for 100 members, a music appreciation room for 30 to 100, rooms for listening to records, rhythmic rooms, a library, offices, instrument rooms, and instrument store rooms.

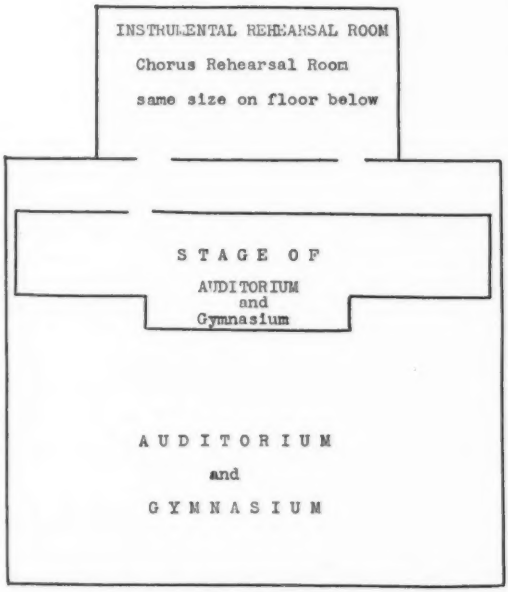
At this point in the panel the discussion was turned over to Mr. Wright who, after passing out some diagrams, proceeded with the discussion from the point of music units in various schools. The first example given was the senior high school at Johnstown, Pennsylvania. The music department is on the top floor and is very conveniently and well arranged. There is a small auditorium seating about 500 with a stage two feet above the floor. Back of the stage are instrument and music cases, and to the sides or wings of the stage are a music classroom and a dramatics classroom. The problem here, however, is that the music department is on the fifth floor while the auditorium is on the second. This necessitates a great deal of moving of heavy instruments. Mr. Wright next told about the music department at Lane Technical High School in Chicago. There they have a large band room, the size of the ordinary gymnasium, and an orchestra room, with practice rooms, offices, recording room, instrument rooms, harmony, theory, and choir rooms branching off. Broad Ripple High School in Indianapolis was the last school discussed by Mr. Wright. Here the instrument rehearsal room is directly above the chorus rehearsal room. This arrangement enables large instruments to be carried onto the stage easily.



Plans of music units on top floor of senior high school, Johnstown, Pennsylvania



Plans of Lane Tech High School, Chicago, Illinois



Auditorium of Broad Ripple High School, Indianapolis, Indiana

Suggestions for improvements in music departments were given by Mr. Wright as follows:

Facilities for the elementary school:

1. Public address system
   a. Morning music—record played in morning through loud speaker system by central office
   b. Music in classroom
2. Space for piano and phonograph
   a. Should have an important place (piano)
   b. Should be placed away from heat (piano)
   c. Phonograph does not matter so much because it is small
3. Radio in each room for sound movies
4. Cases for music and records
5. Activities for children taking music
   a. Choirs
   b. Piano classes
   c. Rhythm classes
6. Club rooms
   a. Should be attractively decorated—drapes, etc.
   b. Should provide 35 square feet per child. Auditorium might be used.
7. Proper equipment
   a. Chairs right height, so that feet can be flat on floor
8. Storage rooms for stands and instruments
   a. Rooms for instruments should be unheated
   b. A regular schedule should be maintained

Facilities for the high school:

1. Room units—isolated
2. Acoustically treated, but not too much so
3. Large enough rooms
4. Practice rooms
5. Recording rooms
6. Files—built in
7. Instrument rooms
8. Cases for music, etc.
9. Chairs—straight and low-backed
10. Heating differently from that of elementary rooms
11. Storage rooms above ground
12. Vocal room should have:
    a. Risers
    b. Chairs for 100
    c. Chairs with arms

Mr. Strauss then came forward to offer a few points about the effect of war on buildings. He emphasized proper ventilation and air conditioning as very important in the schools. He said television is coming more rapidly than most of us realize, and along with the public address systems will come television.

Mr. Strauss brought up some interesting points on rural schools. He said that after the war rural schools will have more than one room for their music department; at least the better ones will.

The point was stated that more and more the auditorium is becoming isolated from the rest of the school by becoming a wing rather than the center of things as in previous times. This is throwing the music department and auditorium together, which is a good thing. Acoustics is now a science rather than guesswork. A good example

of this is the band room in the Indiana University Auditorium. There can be a hundred members in the room playing normally and it is difficult to hear them at the top of stairs.

After Mr. Strauss's contribution, a short discussion was held and the meeting was adjourned.

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HOME ECONOMICS EDUCATION

Discussion Leaders:

Hortense Hurst, State Supervisor of Home Economics Education
Orville Hooker, Superintendent of Marion City Schools
W. E. Hanson, Architect, Connersville

Miss Hortense Hurst, discussion leader, opened the discussion with the statement that in home economics education the planning of facilities is very important. Mr. Hooker said that for years architects have been telling schoolmen that there should always be a planning committee to work with the architect. Later in the discussion the group named specific persons who should make up this planning committee.

Miss Hurst suggested that first of all we should decide what we

intend to do in our education program; then we should plan facilities to fit the need. We must think of tomorrow and its needs rather than of yesterday. Today we try to teach differently than we did 10, 20, 30, or 40 years ago, and we need more than cooking and sewing. Home economics education should provide for every phase of family living. Thus the school plant itself is not adequate. We should begin in the lower elementary grades with our homemaking education because children participate in the responsibilities of the home. Our schools should also have a phase for secondary education and adult education for the men and women of the community. Homemaking education affects both boys and girls in every social circumstance. Relations of home are definitely reflected in the careers of boys and girls; and when we have better training for homemaking, juvenile delinquency and the divorce rate will decrease. The purpose of homemaking education should be to create a better home.

At this point in the discussion, the following question was raised: "Does the University School provide facilities adequate for the need?" Miss Hurst replied that the University School has taken a step in the right direction but that the equipment is not quite adequate. This brought up another question as to whose fault it is that the equipment at the University School was not planned to be adequate for the need. One member of the group blamed the architect. Mr. Andrews said that the fault was in the point of view of the person planning the home economics unit. It should have been planned by a group of people interested in the philosophy of secondary education of the school. He stated that the first thing in any building program is to decide the purpose of the educational program. The whole staff should arrive at this purpose.

It was decided that a committee composed of the following should plan the unit: the State Director of Home Economics, school superintendent, the coordinated staff of the Industrial Department and Home Economics Department. It was also suggested that intelligent P.T.A. and community people are interested in this phase of education and perhaps some of them should be on this committee.

In planning a new unit, we must find what types of service are possible—know the new trends—know types of literature and services throughout the state and nation. Then, we should know what resources we may tap for suggestions for our home economics facilities. It was suggested that gas companies would be able to provide information on stoves, furniture companies could recommend the desirable type of furniture, art teachers could help with the color scheme, and up-and-coming community mothers might have valuable suggestions. These resources should be tapped after we have decided what service we want to render.

Mr. Swihart thought that community people on the planning committee were unnecessary. He said that superintendents and heads of departments should know first what they want. Next, the architect should be consulted so that he can tell them what is possible for the space and money to be invested in the project. Mechanical application of space and equipment affects planning of facilities and is often

the cause of less desirable facilities. It was pointed out that haste caused a lot of faults at the University School, as the plans were drawn up in five weeks. The original plans should be in the hands of the architect a year before the building is constructed. This provides time for the tentative plans to be discussed by school and community people and the architect. Mr. Hooker stated that his school has been planning a building for several years. At the University School, $850,000 was spent after five weeks of planning.

Too often the home economics teacher is inadequately trained for her job. We have allowed almost anyone to teach home economics and have pushed them off into the basement of the school. Teachers should be educated in the teacher-training program to know the needs of their department. One of the greatest problems is that home economics teachers do not teach in many different schools—two or three during their life's teaching. Teachers should be encouraged to visit outstanding home economics units throughout the state and bring back new ideas for their own units.

The common practice seems to be to push the student who doesn't think he can pass Latin into the home economics department. We need the best people in our home economics classes.

At this point, there arose a question as to whether the home economics unit should be within the school building or in a house outside the school. Mr. Swihart was asked to explain the set-up as it is at Richmond. The school at Richmond has a four-room cottage next to the school building where students carry on their home economics work. Here students stay over a week-end to fulfill an assignment. They do interior decorating and serve meals to superintendents occasionally. (This is an experience for both the students and the superintendents. Mr. Merriman said he ate there once and survived.) The landscaping of the yard is done by the garden class of the school. This cottage is for the senior high school students only; junior high students remodel their rooms, etc., as home economics projects. This cottage is simply an adjunct to the school's home economics laboratory.

Is there a difference in the attitude between students in a school laboratory and those in the cottage? Mr. Swihart replied that the cottage definitely provides a homelike atmosphere. In the cottage, of course, is truly homemaking rather than home economics and industrial arts as in schools where there is no cottage. The cottage system must work with the school laboratory in the school, as clothing and cooking projects are best carried on in the laboratory.

Miss Hurst showed the group illustrations of good and poor arrangements of units within the home economics unit. The trend at present is to create a more homelike atmosphere in home economics laboratories so that the child does not feel that the course is so far divided from actual home surroundings.

INDUSTRIAL EDUCATION

Discussion Leaders:

Melvin S. Lewis, Professor of Education, Indiana University
H. B. Allman, Superintendent of Muncie City Schools
Joe H. Wildermuth, Architect, Gary

H. B. Allman's Address:

It seems to me very important, with the emphasis which we have had during this war period on vocational education, that the nation has turned to the schools to educate and train for war work and for actual participation in the work of the fighting forces. Approximately nine million men have been taken. I think the schools deserve credit for having risen to that emergency.

I doubt whether people in the future will be as tolerant of our efforts as they have been in the emergency where time was at a premium, and where space was readjusted without too much consideration for the long-time program in the training of youth. Therefore, the organization which we have toward vocational education, if capitalized upon, will have to be sustained by a program which merits, and will continue to merit, the confidence of the people generally, and particularly the industries of our community.

In suggesting types of buildings for industrial and vocational education, I would say that we need more area, more space. Our shops and laboratories have been crowded into basement rooms. We are going to have to build for vocational education the shop-factory type of building, which is more expensive in construction. The Vocational School at Evansville, Indiana, has one of the outstanding ones.

Those buildings should be constructed with great open areas, without permanent walls. At Muncie, we converted a large factory building. Standing at the front and looking towards the back, you can see into every shop. The machine shop, carpenter area, and the various other departments are all visible. The advantage is in being able to see all the activities that are in progress.

In this superior type of building, there will be a minimum of roof supports or posts. The ease with which departments can be rearranged will justify, in my judgment, not providing supports so that we will have wider open spaces.

With more floor space, we shall need better lighting. We shall likely need to use a prism glass that will admit light of the white quality, but which will be heat absorbent.

Another suggestion is that we are going to take care and avoid overheating. It is going to be as common in the future to have temperature control in shops as it is in this room. We are going to be able to do much more in the way of education with these children in the future if they work under conditions fairly normal. I realize in many industries high temperatures have to be maintained, but that isn't true in this case. The comfort of the worker is an important item.

We need proper ventilation with a rapid change of air, and also plenty of facilities for washing hands, taking shower baths, etc. Too few of our buildings now have these provisions in the shop areas. I

have seen many shops which were inadequately supplied with ordinary sanitary facilities. Toilets were not distributed; perhaps there was one central unit instead of one with each department in the shop. They should be placed at a point of convenience.

I visited a factory where they did foundry work, the dirtiest type of work; but they had a fine shower and locker room. When through with the day's work, the men took off their clothes, cleaned up, and went out on the street feeling not like dirty, greasy, working men who would have to go home through the city, on busses, etc., in an untidy condition. They "dolled" themselves up before they left the foundry. That was an important point to me.

Not only should they be equipped with shower and locker rooms of the right type, but also I personally would advocate introduction of recreation rooms, game rooms, canteens, and smoking rooms. Practically all industries are providing them; I see no reason why we should not provide them in the schools. A school in the Chicago area has smoking rooms provided for students and teachers alike.

In connection with the general instruction and equipment program, I should like to make just one suggestion. I feel that in place of owning our equipment for shops, particularly the heavy type of machinery, we might well do as we do with our equipment for the commercial departments—lease it. As quickly as a new improvement is brought out, ask for new ones under the lease. That is being suggested for shops so that we shall not be faced with the problem in the future of having our shops loaded with machinery that is old. A school loses prestige when its equipment is obsolete! The school should be on the forefront in equipment; and the equipment companies are beginning to realize this fact and are advocating a method of leasing.

Melvin S. Lewis' Address:

I would say that a proper beginning for me would be to ask the location of the architects and then establish a good barrier between them and myself before I say anything.

In these specialized areas—certainly industrial arts and trade industrial areas, home economics, and, I think, commercial education can properly be classified as others—I make a pretty broad general statement when I say that architects generally don't know a thing about the educational problems involved in these areas. This is a challenging statement. Generally speaking, over 32 years of experience, involving in that period of time a few school building projects as well as state-wide supervision in this field for four years, I am inclined to think that there is truth to that when I say they literally do not know the educational problems involved in these specialized areas.

What we get is the kind of thing which traces back to the good old manual training of the 1890's. I don't know whether we can blame the architect or not, because he could come back and say that this is our field of experience. I think we literally have to know our own problems and then by cooperation with these architects bring the professional expertness in our fields to them. They, in turn, can use the professional expertness in their field and get the desired result. With

all respect to the superintendents (and I was one for a number of years), they do not know the problems of buildings, and equipment, and supplies. Superintendent Allman is likely an exception.

If this is such a specialized field, and I think it is, that even the superintendents, the general school administrators, don't know any too much about the very many details, then how could we expect the architects to know all of these details. These fields are so specialized that they are known best to the men who are themselves teachers in the fields and vocational coordinators.

I think it is a problem of cooperation, and only by good, intelligent, continuous cooperation will we be getting the kinds of things in the completed structure that would be wanted. If I were making a suggestion, I would say that the general administrator who is contemplating a building, even just a township high school with departments of home economics, industrial arts, etc., has a possibility of getting a kind of knowledge that he does not possess as a principal or trustee, if he will make use of other peoples' training and experience.

If his building is to be in the agricultural area, he should use a good teacher of agriculture. Also, there is the State Supervisor of Agriculture and the teacher-training division; and those people know what constitutes best construction for agricultural laboratories, classrooms, and farm shop buildings. These are specialized areas, and the man who is a principal of a township high school won't know one tenth as much about them as the specialists that I have named. After getting counsel from a specialist, he is then in a position to talk with the architect

I know of various instances in which a good supervisor in the northern part of the state was consulted about building problems. Why did the administrators go to my friend to ask about their problems? Because they had good enough judgment to know that this man had the reputation of being one of the best supervisors in the state. They got very much better results than if they had not brought in this man to aid them in their thinking.

This holds true in any field of industrial education. The people who are experts on the staff of the U. S. Office of Education, Vocational Division, used to be organized under the whole title, Federal Board for Vocational Education. About 20 years ago they put out a bulletin entitled "Rooms and Equipment for Home Economics." That was the best material in print for several years, but its inadequacy was soon recognized. The period from 1917 to 1930 was a period of rapid development in this field. It was recognized that something much more up-to-date was needed in connection with this whole problem of rooms and equipment in home economics. So for about three years the Office of Education had members of its staff working on the problem of a bulletin which would be an authority on this subject. There were consultations in every region of the United States with teacher trainers and supervisors of home economics. The result was a large bulletin, profusely illustrated, perhaps 300 pages in content. That bulletin is available from the U. S. Government Printing Office. It is one of the authoritative publications in

that field, and I would say that only one out of thirty administrators that I have talked with in my work throughout the state had ever heard that there is such a publication.

If that kind of information is not known to the administrator, why should it be known to the architect; so I have full sympathy for the architect. But that merely reinforces the point that consultation between the responsible administrators, the experts in the field, state supervisors in industrial education, and teacher trainers in those areas is needed before one can begin to get results. That would be my own judgment.

Now you have some problems which are a little different in these specialized areas. In fact, they are very different from other general school purposes.

1. Space problems
2. Outlet problem
3. Lighting problem
4. Noise problem
5. Dust, obnoxious gas problems
6. Floor and floor covering problems
7. Electrical power problem

The problem of planning for electrical power is to be considered in relation to the possible moving of equipment. You have to have wires run to carry certain types of machinery. What if you find you will be needing a heavier type of machine!

In regard to the floor and floor coverings, I think that we ought to know better than the architect the types of floor surfaces which are adapted to a particular type of work. We don't like a cement floor for a woodworking area where a sharp-edged tool may be ruined upon dropping.

The teachers know and the supervisors know; but some of the architects do not.

Joe H. Wildermuth's Address:

In answer to the challenge by Mr. Lewis to assert ourselves, I might say that we are pretty much in the minority here. I suspect there are only 10 per cent of us; so probably prudence is better than valor. Also, in a general way, school people are the customers and we are the salesmen. Of course, the customer must be right. However, I would like to make these remarks.

As I understand it, secondary education was conceived on the principle that only 10 per cent of the grade school children would enter the secondary school field and that they were destined for an academic education for teaching. Today, practically all of the grade school children enter the field of secondary education. Therefore, the standards of the secondary schools should be such as to provide for the education of the 90 per cent who are destined to work with their hands. It must be that you educators are feeling that need of studying a part of your program that applies to the work with the hands. Of course, vocational education is not all of that. There are homemaking and the other sciences, but I do believe that

your time is now right to coordinate that hand art with your other school as regards the planning of the vocational facilities. You have seen it all come from the literal manual training shop in the still small school, where the child has a chance to learn the applied arts of instruments in addition to the woodworking tools. There has been, I think, a feeling lately that, combined with this vocational education, there should be brought down some of the other applied sciences. The physics laboratory perhaps is better located down with the shop section for the 90 per cent who are going to work with their hands than it is up on another floor for the 10 per cent who are going on to college to use their academic education.

I should like to say this: I believe there will be a better understanding between the educators and the architects if we both take each other into our confidence a little bit. You criticized some of the educators who don't have definite suggestions to make to the architect when he is called into the field. There is a chance of that being overdone. I believe the average good architect would rather you would sit down with him and tell him your problems of education, tell him in a broad sense what you are trying to accomplish, than to try to tell him where you want this room, what type of plumbing fixtures you want in the particular room, etc. John Kelley can tell you that. He has done work for the industries such as General Motors. What they hire the architect for is to tell them what is the best arrangement for equipment, etc. If the educators will try to analyze their problems as to what they feel they ought to teach in their community, then the architect can work with them in trying to solve those problems. Maybe he knows a better floor covering than you suggest; maybe he could conceive of a better plan.

That is my reply to your challenge.

AGRICULTURAL EDUCATION

Discussion Leaders:

B. C. Lawson, Professor of Vocational Education, Purdue University
Harry F. Ainsworth, State Supervisor of Agricultural Education
Lester Routt, Architect, Vincennes

The following points were made by Dr. Lawson:

1. A program should be made which is pointed to vocational efficiency —really working toward the development of some ability which the student can use outside the school.
2. Provision needs to be made for farm mechanics.
3. Provision needs to be made for a workroom in which to test soil, milk, etc.
4. Storage space for materials is needed.
5. A program of vocational agriculture is needed that extends beyond recitation.
6. Classrooms are needed that provide work-study opportunity.
7. Farm projects should be planned.
8. Provision should be made for keeping records.

Dr. Lawson at this time showed sketches of proposed combined general shop and farm shop. He suggested that double windows be

put between these two. Plans were drawn to accommodate 20 students. Suggestions were made that the tables be cut down to two feet in width so that work might be done on the one side of the table only and the pupil might face the teacher. The proposed plan called for the following space: 70 square feet per pupil if there are 12 pupils or less; 60 square feet if there are more than that. A door large enough to get big equipment in and out is needed.

A question was raised concerning provision for projection machines, to which Dr. Lawson explained that the movable machines would probably be used, but that no exact provision had been made for them.

Dr. Lawson discussed the vocational agriculture situation at Columbus, Indiana. He discussed the candle power needed in the shop room; the advantages and disadvantages of the one-room and two-room setups; the fact that the forge flue should be made to keep smoke from coming back into the room; and the provision of washing facilities.

He has set up as standards for the farm shop: from 22 feet to 30 feet (preferable) in width; from 40 feet to 50 feet (preferable) in length; and glass area equal to one sixth of the floor space.

The noise question was then raised: Mr. Routt, architect, explained that noise could be controlled by deadening the floors and partitions between the classrooms. If convenient, however, he said it seems to be more desirable to have the shop in an outside building. One instance was mentioned where the shop was combined with the gymnasium.

It was agreed that agricultural problems vary in the different schools, and that they must be worked out to fit the need of the particular school.

BUSINESS EDUCATION

Discussion Leaders:

Elvin S. Eyster, Professor of Business Administration, Indiana University
J. C. Wagner, Superintendent of Hartford City Schools
Harry E. Boyle, Architect, Evansville

Mr. Boyle read his paper, first distributing drawings of possible plans for a business department.

Mr. Boyle: As I understand it, the business department functions primarily to offer training for stenographers, bookkeepers, clerical workers, salespeople, etc. In general, the classrooms are usually scattered. I should think a more feasible plan would be for the commercial department to be near the center of the building. This arrangement would make it possible to use a workable plan to handle stenographic and commercial work for department heads and teachers of the entire school. Many features of the school will function more clearly if the business department is located near the center of the building. The bookstore, the bank, etc. will be accessible to facilities of the business department.

A bank should be a part of the business department as it is necessary that a campaign of thrift and saving be taught students. The bank should be the financial center of the school. Training could be offered accounting students who are preparing for positions in banking institutions. Ticket sales, etc., could be handled there. The equipment needed would include a tyepwriter, check protector, files, unit for ledgers, and bank statements.

A school store should be provided to handle books and supplies for students and teachers. The equipment needed here would include a counter, cabinets, shelving, desk, and cash register.

In the accounting department instruction should be offered in the use of accounting machines, comptometers, and statement machines. Included in the equipment should be a bookkeeping teacher's desk, student's desk, blackboard space, and space in drawers for books and forms.

I believe the geography of industry should be included as a subject in any well-balanced business curriculum. It should not be the objective of this program to turn out industrial experts or plant inspectors, but to develop a set of principles whereby the business and industries of a community may be judged—determining whether or not that particular business is well adapted to the community it serves. Equipment for such work would include lantern slides, and exhibits collected for commercial geography and available for the whole school.

Discussion followed regarding the blueprints Mr. Boyle had distributed.

Mr. Wagner: I notice a Typewriting Educational Research Bureau is attempting to show typewriting as an aid to instruction in the elementary classroom. They are giving publicity to such phrases as "The typewriter is an aid to self-expression." I wonder when we should teach typewriting? To juniors and seniors? Too many of us are gearing the course to the number of typewriters we have.

Mr. Barnhart: We taught typing in the ninth grade for a few years and we were delighted when we were able to stop. I think that has been the general experience. It isn't very satisfactory. It is possible to teach typing to children in the lower grades, but I think we had better teach typing, spelling, English literature, and such.

Mr. Eyster: Typewriting in the elementary and junior high school meets a different objective altogether. In the senior high school it is job preparation primarily. This is not to say there isn't some use for it for the individual, but the objective in the elementary school is an entirely different approach from what we have had in the field of business education.

Mr. Barnhart: I came down today hoping to get some information on a problem I have been thinking about. What development has there been along the line of arriving at standards in commercial equipment? What kind of furniture will be used? What size rooms will we have?

Mr. Eyster: I am inclined to say there are some trends we can observe. They may not be reliable. Many of the trends are in the direction of making these schools purely job preparation. We must plan our equipment in such a manner as to be similar to equipment used in an office. It is necessary to develop our laboratories in keeping with the regular business office. We must use equipment that is used in a business office. I would say the trend is to furnish the business department as nearly like the office as possible, using equipment without moving it about. I think we will want a laboratory type of room rather than a classroom to meet many needs. I believe the job preparation program is being upgraded on an age level. I think the real objective of business education has something to do with the type of equipment we will select.

Mr. Barnhart: Is there any possibility that the teacher-training organizations can get together with architects and determine whether or not standard desks are obtainable for schools and industry?

Mr. Eyster: I have recently had from Kansas and Missouri requests about equipment for typewriting rooms. I don't know what has been done.

Floor: Would noise have anything to do with the placing of the typewriting room?

Architect: Not with modern equipment.

Mr. Barnhart: It would have to be a very large high school that could use a calculating machine room all day. Classrooms should be large enough to serve shorthand, bookkeeping, or whatever needs are required.

Mr. Wagner: I find a tremendous demand for business education. Should we try to handle this on a secretarial basis or should we move more in the direction of elementary phases of business administration and distributive education? Should we be planning for adult education? There are many indications that we will need to plan for this phase of training in our business departments.

AUDIO-VISUAL EDUCATION

Discussion Leaders:

L. C. Larson, Research Consultant, Bureau of Audio-Visual Aids, Indiana University
Alex Jardine, Superintendent of Evansville City Schools
Merritt Harrison, Architect, Indianapolis

Mr. L. C. Larson opened the discussion on audio-visual education by stating that he would outline the uses we can expect of audio-visual education in the future.

Mr. Jardine approached the problem from the school administrator's point of view, and Mr. Harrison followed with a technical consideration, after which there was a general discussion.

Mr. Larson: In the field of audio-visual education we can expect important developments in the future. I would like to suggest some trends which are apparent on the basis of the evidence that is now available. Of course, some of our planning must be held in abeyance until the results of more recent research are released.

Mr. Larson then discussed the major types of audio-visual aids used to re-enforce regular classroom instruction. He used, as examples, units on "Care of Milk" and "Soil Conservation" to illustrate the possible role of museum materials, motion pictures, still pictures, radio, and graphic aids in postwar classroom instruction. Following his remarks on the functioning use of the several types of aids in the classroom, Mr. Larson spoke briefly on the subjects of (1) viewing and auditing rooms for reference use of films and radio transcriptions, (2) production facilities, (3) the use of FM radio in the school program, and (4) educational uses of television.

Mr. Jardine: There are some practical things that school people ought to be thinking about immediately, so that when materials are available we can go at once into a functioning program. We all ought to be working on making a complete inventory of our needs in the home field of audio-visual aids. There has been a tremendous development in this area in the training of men in the armed services, and after the war there is no school system in the land that should be without an adequate program so far as equipment is concerned.

Also, in the realm of new buildings, teachers, particularly, and supervisors must be aware of some of the things that Mr. Larson has indicated so that we do not build schoolhouses in 1946 on the 1910 or 1920 pattern. We are going to pool all of our best information on the school, the parents, the administrator, and the architect to develop a functional building so that we will not have to go in and later put in outlets for projection purposes or have to develop some more adequate system of ventilation; we must have the vision to foresee the needs that will arise in the school building of tomorrow.

We must also do more in the field of teacher training. I am constantly aware of the inadequacy of teacher-training institutions in acquainting young teachers with the things that Mr. Larson has indicated. We need a program for in-service training. Young teachers should have that training before they come on the job.

I would also suggest that immediate steps be taken to determine what facilities are needed, so that when the war is over and materials become available we will be in a position to make rapid progress in this field.

One last thing—we cannot conduct an adequate program in this area unless we have some money. We must include in our school budget items for radio and visual education purposes. We must have money for the development of this program. The developing of an audio-visual program is a continuous process.

Mr. Harrison: Some one has said that we plan our buildings and then our buildings plan our life. It is very important too that our equipment be so placed and so arranged in the building plans that it can be satisfactorily used and available.

Discussion from the floor followed.

Mr. Kenneth Thurston: In the use of materials there are some very interesting possibilities. It will take some time to train our youngsters, but in time the youngsters will catch the spirit of investigation in the classroom.

Mr. Frederick Neel: In an elementary school where should the audio-visual instruction be given?

Mr. Larson: One problem is in terms of planning for the use of these instructional materials in old buildings, and the other is in planning for new buildings. There is the general principle that these aids should be used in the classroom and as a part of the instructional process. It is neither difficult nor too expensive to equip the ordinary classroom for a more effective use of these aids. Certainly, architects in planning new buildings should make provision for the classroom use of the aids which we have discussed.

Mr. Jardine: In planning such buildings we should plan them within the financial limits of the community and then not have to cut off the so-called frills. They should be constructed within the budgetary limits so that desirable features would be available in as many schoolrooms as possible. Here, for example, provision should be made for all of these ideas, so that in the end you are able to have the required facilities. Just as in building a factory you build it around the machines, so in planning a building you would plan it to fit the above-mentioned needs. It is impossible for the architects to know or comprehend the facilities or equipment that will be needed. That is up to the educators. The architect's job is to house these educational activities.

Floor: After the equipment has been installed do you suggest how much there should be allocated to audio-visual work in the budget?

Mr. Larson: The average per student expenditure for books and magazines by our university libraries is $20. It seems to me, therefore, after the war, that a budget of around $20 per student on the college level would be within reason, $12.50 for the secondary pupil, and $7.50 per pupil for the elementary per year. There are schools over the country that are approaching that level now.

Mr. Jardine then ended the discussion by stating that if one could spend an equal amount for expansion of the library for audio-visual education that would be a good beginning. It has to be a definite part of the budget and must be so considered from now on.

Informal Conference on the Functional Planning of Facilities

Group II

LIBRARY

Discussion Leaders:

Margaret Griffin, Instructor and Critic Teacher in Library Science, University School, Indiana University
O. M. Swihart, Superintendent of Richmond City Schools
D. J. Zimmerman, Architect, Indianapolis

To open the meeting, Miss Griffin asked Mr. Swihart to emphasize the housing features, making a functional group of library rooms. Mr. Swihart responded to this by describing the library facilities at Richmond High School. He described the library as being formal and symmetrical, beautifully decorated, and well arranged. At either end of the reading room—which seats 200 students—are two rooms used for conferences. The principal objection to the library described is that the lighting system is not too good. Mr. Swihart went on to say that, in his opinion, a library should have an office for the librarian, book repair rooms, and a study room. It should be built near the middle of student traffic, that is, if there are three stories in the building, it should be located on the second floor near the front of the building. He suggested that a desirable position would be between the social science department and the English department.

At this point, a member of the group stated emphatically that a study hall should not be located in the library. The student should be made to feel that the library is a good place to go; and the presence of a study hall often has an undesirable psychological effect on the student. Miss Griffin explained that the study hall and library are combined at the University School and that the arrangement had worked better than she expected.

Mr. Zimmerman took up the discussion by explaining that it is extremely necessary that the librarian and architect cooperate in the planning of a library in order to have good design. He believed that the library should have the atmosphere of a community reading club. He suggested that lighting is of utmost importance in a library. If skylights are used, some provision must be made for shutting out the heat. Large windows are good for day and lend a nice atmosphere at night when passers-by are able to look in and see students or other persons reading. The merchant's idea of window display illustrates that the effect is good.

Mr. Larson raised the question as to whether or not books and audio-visual aids could be combined to make a dual system of instructional materials. He pointed out that up until now leadership in the field of audio-visual aids has been assumed largely by the

social science teacher and that perhaps this leadership should be assumed by the librarian. This brings up an important problem of training. In the case of books, the librarian can find authentic reviews in magazines, etc., and needs not read each book to know its content. But in the case of audio-visual aids, each film must be run and notes must be taken. The process of running a film seldom takes less than 30 minutes. Mr. Larson stated that, with a library of 2,000 films, it would take a librarian a month of working hours to learn what each film contained. If audio-visual aids and library facilities are to be combined, there must be a specially trained librarian with an interest in aids, in charge.

Mrs. Schad stated that a lot of things are dumped into the lap of the librarian. She feels that checking and housing audio-visual aids is a clerical job and that the librarian can serve her school better by reading. If there were an assistant in the library to care for the films, the combination of books and films in the library might work fine. Mr. Swihart agreed with Mrs. Schad that visual aids work is not the librarian's job. He said that aids are put into use by experts and it is the librarian's job to deal with students. Dispensing aids is a clerical duty; selection of aids is a technical duty. It was pointed out that a large high school is concerned with the problem of visual aids to a greater degree than a small high school. Mr. Larson added that every school should make expeditious use of all instructional aids.

At this time, the discussion of teacher conference rooms in connection with the library was taken up. Mr. Swihart advised that the conference rooms be near the library but not directly connected with it. Miss Griffin added that some of the conference rooms should be large enough that a teacher might take her whole class to use special library materials; other rooms might be very small.

Miss Browning described the George Rogers Clark library at Hammond, Indiana. She stated that it is beautifully decorated, and has a librarian's office and three conference rooms. Her only objection to this library is that the reading room is too large. In Miss Browning's opinion, a librarian cannot work effectively with 200 people in the central reading room. She suggested that perhaps 60 to 100 students would be better.

It was suggested that elementary libraries should be very informal with more of the home environment than high school libraries. Some authorities have suggested that an elementary library should have a fireplace. Mr. Zimmerman stated that one library might be adequate for the needs of a school and an identical library in another school might not be adequate for the needs. Thus, a library must be planned to fit the type of teaching done in the school.

Miss Griffin asked how a library could be made beautiful without sacrificing shelf space. She explained that much of the beauty of the University School library lies in the wall panels, and asked Mr. Zimmerman if shelves could be built in front of the panels to provide more shelf space. Mr. Zimmerman said that shelving should be utilized in the architectural work to become a part of the

actual building. Shelves should provide part of the beauty of the library and blend with the style of walls, ceiling, etc. He pointed out that the librarian and architect should cooperate in designing the library. More time should be used in building a building on paper than in building it physically.

Miss Browning advised that recessed shelves should never be built. She stated that shelves should be movable because space is wasted when shelves must be placed to skip supports in the walls. Filing cabinets should also be movable and there should be plenty or room for expansion of files as well as expansion of the whole library unit.

A member of the group said that he believed the library facilities should not be open to any adults except special study groups. Another member differed with this opinion and stated that he thought tax payers should be allowed to use the library after school hours and to borrow certain books. The present trend is coordination of the resources out of public funds for the most people in the best way possible

Near the close of the session Miss Griffin asked what the minimum facilities from the standpoint of housing would be. It was decided that for a school of 300 students, the minimum library facilities would be a workroom, a conference room, and a central reading room.

In the final analysis it was decided that the administrators, architects, librarians, and other teachers should cooperate to plan a library which would be adequate to fit the pattern of the school.

Information for library planning and equipment may be obtained from the Gaylord Supply House, Syracuse, New York; the *American School Board Journal; Nation's Schools;* and Remington Rand, Division of Library Bureau.

SECONDARY EDUCATION

Discussion Leaders:

C. G. F. Franzén, Professor of Secondary Education, Indiana University
H. H. Binford, Superintendent of Bloomington City Schools
William McGuire, Architect, Indianapolis

Dr. Franzén opened the discussion.

Mr. Dungan: I am from Lockland, Ohio, and we have had a number of people move into our community who are employed at Wright Field. As a result, we have more money and our students have acquired ideas. We have cared for our high school and elementary education in the same building, and now a demand has come for a separate building. We have a nice auditorium in the building we have, but I still don't know whether it would be wise to build. I'd like some answers on the question.

Dr. Foster: I would favor a double unit because of administrative leadership. If you secure a man well-grounded in secondary edu-

cation your elementary school will suffer; and if you secure a man in elementary education your secondary school is certain to dwindle.

Mr. Haworth: I feel we must be rather economical in our postwar building, even more than we have been in the past. We must build our rooms so the units will be close together. We should plan to take care of adult education in our schools. Our buildings should be accessible.

Dr. Franzén: We must, of course, provide access to our various units. To me there is no standard-size classroom. Here's another problem. Special rooms are for special purposes. But when it comes to the English teacher—can you have just an English room? To what extent can you make a room of a certain kind just for that particular thing?

Mr. Andrews: I'd like to make a plea for three types of rooms.

1. We ought to have some small rooms.
2. We need a room in which we can put two or three classes or groups together, a room 2½ times an average classroom, that can be used for bringing together regular classes in an integrated program, and can be used for regular classrooms when necessary under certain crowded conditions, by the use of movable partitions.
3. We should have a little theater type of room for all types of secondary education, affording opportunity to do some type of laboratory work and yet making actual instruction, etc., possible.

Dr. Franzén: I know of a situation where the school plant consisted of 21 regular-size classrooms throughout the entire building with 21 exits. They are able to empty the rooms of students within a very few minutes. Of course this is the exception.

Mr. Andrews: The architects probably will not be pleased with mention of this, but in some of the military camps I visited recently I was amazed to see them constructing new classrooms while other classes were in progress. If they wanted a large classroom or auditorium they merely moved a wall and made the room according to the required dimensions. The finished room was complete with molding and everything.

Mr. Haworth commented on the above, saying it was probably expensive.

Mr. Andrews: I think this is probably not true, for that is supposedly one of the reasons that type of building is used. I realize, though, that the construction noise might be a problem to classes that are in progress.

Dr. Franzén: Does anyone in this room believe in the fastened-securely school-desk type of thing? We want to know who you are if you do. Of course the way I have stated the question should make your answer obvious. We want movable furniture.

We must decide whether we shall plan for permanent Youth

Centers. Will it become a community or school responsibility? Will it care for the social activities of the school—Boy Scout equipment, Girl Scout equipment, Hi-Y, etc.?

The noon hour program, cafeteria, etc., must receive consideration, as also must little broadcasting stations.

Why don't you schoolmen get together and make up your minds as to what you want—then come to us with your requests and well thought-out requirements, to make your program work the best.

Superintendent: Why don't we make a check list of things we do and don't want in our buildings?

ELEMENTARY EDUCATION

Discussion Leaders:

H. E. Moore, Assistant Professor of Education, and Principal of University School, Indiana University
Harvey Poling, Superintendent of Monroe County Schools
James B. Hawkins, Architect, New Albany

Mr. Moore: The elementary school program must be designed to meet current needs. Mr. Poling, would you like to outline what changes have come about recently to meet present needs in elementary education?

Mr. Poling: I think that probably one of the most characteristic things that has happened to our educational setup in the last decade or so has been the insistence that we go beyond what has traditionally been considered the elementary program and do a number of other things.

To mention a few, there is the feeding project, greater emphasis on physical education programs, physical fitness programs, the development of more lahoratories, and better methods in education in even the traditional things. We might say, "How much does the elementary school in its program provide for the participation of the community?" In the rural schools, particularly, it is the meeting place for the 4-H clubs and for other clubs which are not connected as closely to the schools. It is your voting place during elections. My feeling is that, briefly, your building should do two things: (1) It should care for the actual program of the school, and (2) it should take into consideration community needs which would be different in almost every location. This thought has been expressed many times at building committee meetings which I have sat in on.

Why couldn't we get a pretty stable kind of building and then fit it to each community? Even if it is only a four-room structure, it needs to be tailored to the exact needs of the community.

There are a number of changes that have been made very recently in terms of the state program which we are going to have to think about. One is the provision that was made for supervision in music, and another is the audiometer and speech

program under the 1927 law, establishing speech classes for speech correction, and so forth. One of the big stumbling blocks is the lack of facilities to carry on. There is a vast difference between providing a roof, floor, and chairs, and calling that a school and creating an educational plant that will give optimum opportunity for the child to learn. It can be fireproof, virtually speaking, and still be a poor educational plant unless carefully planned.

Mr. Moore: As I understand it, we have gone much further than our traditional 3-R program. In addition to the program with the child, we ought to go quite some distance in working with the community. That being the case, I wonder if Mr. Hawkins could not suggest what changes we should make in the elementary school plan.

Mr. Hawkins: Most of my experience has been limited to the elementary schools in Floyd County, and I believe those schools fit in with the community needs. We usually try to provide space for supervised recreation. In New Albany our elementary school takes in the first six grades. Therefore, most of the children are small and the biggest part of the recreation has to be indoors in the winter, of course. We have provided for supervised indoor recreation in the gymnasium which can also be used for gatherings. It is provided with cooking facilities. In the rural schools that same idea has been carried out, for in the southern part of the state community activities center around the school buildings.

Mr. Moore: Would you describe the newest elementary building which you built in New Albany?

Mr. Hawkins: The building has one room for music and for the teaching of dramatics. It is a regular standard classroom with a small stage in one end, and could serve the purpose of a small auditorium. The various grade rooms have individual touches; a special design in the floor covering is an example.

Mr. Poling: In some buildings I have found that they do not provide for a separation of the community room from the rest of the school. The whole building has to be opened up before access is had to this room. Often they do not provide for toilet facilities and for heating that room without opening the rest of the building. This is one of my first suggestions: it should be a complete unit in itself.

Mr. Moore: I suspect this group might be interested in sources of help in school building plans.

The Architectural Record carries up-to-date plans, if you are interested in elementary school planning.

The *Nation's Schools* and the *American School Board Journal* also carry very fine diagrams and pictures of the most modern building plans.

The *American School and University* is another very good source. This is an annual publication, giving an all-over view of what has happened in the year along these lines.

Also Alice Barrow's booklet, *Planning Elementary Schools*, from the U. S. Office of Education, is good.

As I have looked at new plants, there are four or five things that seem to impress me in the new school buildings:

1. The size of the rooms. There is a tendency to enlarge the room, getting away from 32 feet and making it 36 feet or more.
2. The use of color throughout. This is beneficial in that a child feels he moves from one environment to another as he progresses through the grades.
3. Acoustical treatment. This has the advantage of making an entirely different room situation. It takes out tenseness in minor disturbances which are inevitable when you have a room full of children.
4. Movable furniture. This makes a wide range of activities possible.
5. Wide range of display space. We have this now instead of an overuse of blackboards. (It seems that we may have gone a little too far in this direction.)
6. Amount of storage space.

Mr. Poling: How about floors and floor coverings? I should like to ask about the floor treatment of gymnasiums for elementary children. What has been the success of other things beside wood?

Mr. Neel: Hunter School has a linoleum-covered gymnasium floor. It has been good these several years, and apparently can stand several more years of wear.

Mr. Hawkins: Asphalt tile in the grade school gymnasium makes a satisfactory floor covering especially so since it does not require as much care as a wood floor. The maintenance is considerably less.

Mr. Moore: In regard to storage, it has been found to be desirable to have the storage space inside the room or else to provide a coat hall. The Laboratory School at Terre Haute has coat halls for most of the elementary rooms, while the University School has the storage space within the room.

Miss Dunfee: We have discussed the school building problem as related to the community and to the pupils, and I would like to make a point for teachers.

It was my privilege in Bellingham, Washington, to be in a school planned by teachers. Extensive card files were kept for months before the building came into being. There was every possible type of storage space for both teachers and pupils. Each room had its own individual touches, and there was a suite of rooms for each grade.

Mr. Moore: There is still a need of more space for rooms which teachers may use. It is a question of work rooms as well as rest rooms.

Mr. Wagner: Isn't there a trend in the matter of playground facilities that we should recognize? More space is being allotted to

gardening, flowers, landscaping, etc. Along with that, I think there is something that has not been done in the elementary schools in the way of providing showers for the younger children.

Mr. Moore: I think that criticism is just. A sixth-grader, upon his promotion, suddenly finds that he has a privilege of showering not previously known to him.

Mr. Poling: Would it be out of order to ask what are the possibilities for remodeling existing buildings? Are the buildings now being erected of such construction that they can in another 25 to 40 years be remodeled without too much expense?

Mr. Hawkins: We have a building in New Albany that is not over 30 years old, and it is really unfit for use, not because it is an unsubstantial building, but because it isn't worth spending $5,000 to fix up. I believe this is generally true in buildings over 30 years old.

Mr. Moore: In other words, we need certain criteria to guide us to keep us from making unwise expenditures in constructing buildings which can no longer be used after a period of time.

Mr. Hawkins: I am in favor of set areas. I believe that in a large city an elementary building should be located so that a child would not have more than a half mile's distance to school, and in the high school not more than a mile. Also, I am in favor of the first six grades being located on one floor.

Mr. Neel: Don't you think there is a size below which enrollment should not go? If so, what would it be?

Mr. Brocker: It has been recommended by some that they are more efficient when around 600 pupils are enrolled. However, the average community accepts around 350.

I am acquainted with an elementary school situation which was greatly changed by centralization. Pupils who were formerly scattered in three buildings with enrollment of 190 each are now in one central building having accommodations for 550 to 600.

The distance that Mr. Hawkins mentioned is about right.

Mr. Poling: May I ask the opinion of this group? What would be the sentiment here in regard to a review from a state level before a building would be permitted to be constructed? In other words, from the State Department.

Mr. Brocker: Such a plan is used in Pennsylvania and Connecticut. First, the general plan is submitted to the County Board. Next, the approval of the Department of Education is secured, after which a location is selected. Then both boards come in. Finally the plans are reviewed by the State Plant Division which works with the State Department of Education, which approves finished drawings.

Mr. Moore: School buildings certainly should be located as a result of careful studies. We need to be sure that we have an educational program on planning but not one actually dominating.

Mr. Poling: What would be the feeling for having a school building code from the educational point of view? The state fire marshal

sets up certain standards and says they are sound. Likewise, the health division sets forth its program.

Mr. Moore: The states that are making real progress are doing that. Tennessee and Kentucky have made far more progress in the last ten years than we have made in Indiana in this direction. Such a division in a state must be continuous and not be ruled by political changes. When you put in a new man every two or three years, it would be so organized that it probably would be better to be without such a division than to face the problems as a result of changing personnel.

NURSERY SCHOOL-KINDERGARTEN EDUCATION

Discussion Leaders:

Ruth G. Strickland, Assistant Professor of Education, Indiana University
Mildred Thurston, Instructor and Critic Teacher in Early Childhood Education, Indiana University
Lawrence B. Perkins, Architect, Chicago

The panel was opened by Dr. Strickland and a rather informal discussion was proposed. The program was first set forth and Dr. Strickland, Miss Thurston, and Mr. Perkins talked back and forth on several points. The purpose of the program is to meet the needs of every child. They should have good physical care and lots of playtime. Every child should be greeted individually each day so that he will feel he is wanted and important. There should be inside and outdoor play every day and space for rest. If the nursery school is a half-day one, small mats are sufficient, but if it is a whole-day program, cots are more desirable.

Miss Thurston added a few points here in the discussion. She said that space was most important. There should be built-in equipment, a fireplace, easels, etc. Shelves should be within reach of children and should not be too deep. Mr. Perkins commented here that built-in equipment was like trying to get something for nothing; that instead of putting things into the wall, you were simply bringing the wall closer to you.

The uses of the nursery school were next discussed. It was found that there are primarily two needs, the temporary and the permanent. The temporary needs are caused by war, the permanent ones, by social adjustment. Parents want their children in groups cared for part of the day by trained teachers, because the children need direction and youthful companionship.

The kindergarten is important too. It is a part of the public school system usually, and is more at a median than the nursery schools. Most nursery schools cater either to the under-privileged or to the wealthy. The nursery school is usually run at a loss financially but, as Dr. Strickland pointed out, the social adjustments and various advantages to the children are great enough that the cost is not too important. Dr. Strickland also pointed out that the nursery school in England is comparable to our kindergartens.

Points brought out in regard to planning were that there should be plenty of space and good playground equipment. It has been found that the "homemade" type of playground equipment is more successful than the expensive metal toys, and has more educative value on the whole. There should be an outdoor storage place for all this equipment.

Mr. Perkins presented a plan for the arrangement of a nursery school which was much approved by Dr. Strickland and the rest of the group. He suggested that there be two playrooms with office, reception room, and washroom centrally located so that the teacher in charge could see what was going on easily.

For this plan, Mr. Perkins set down an outline:

1. Office and reception room
2. Clothing room (there should be space here for children to sit down and take off snow-suits, boots, etc.)
3. Two playrooms
4. Washroom—directly off the clothing room
5. Kitchen—tributary to the playroom
6. Play-yard—directly off clothing room

(Mr. Perkins drew a diagram at this point to illustrate his points)

Built-in equipment is not much of a space saver. Color is very important in a nursery school and kindergarten. There should be a bouyancy about the room conducive to children's whims. The room should be a light, well-ventilated place with large windows and low sills. Ultra-violet sun lamps are very good. Sunlight is very important, and if you can't have natural sunlight, a sunlamp is extremely useful. There should be a cheerful atmosphere about the place. Children react to nice things; that is, new furniture, etc. Utilization of playrooms should be complete. They can be used for sleeping, eating, and playing alike. Bathroom facilities should be individual, accessible, and attractive.

Children are more attracted to small places than large ones. Large spaces invite running and noise. The children should have contact with the parents and get used to visitors. The usefulness of an observation booth was discussed and the conclusion was reached that an observation booth in teacher training is almost a "must" but ordinarily is not too necessary.

Finances should not be primary in planning a school. The child as an individual is much more important than cost. It was suggested that, if nursery schools were placed nearer public schools, they would be much more extensively used. However, it was mentioned that, if this were done, the public school system would swallow it up and it wouldn't get the attention it should have.

The meeting was closed rather abruptedly because of the lateness of the hour.

ART EDUCATION

Discussion Leaders:

Earl Johnson, Principal of Burris School, Ball State Teachers College
Adrian Little, Superintendent of Huntington County Schools
Wilbur Shook, Architect, Indianapolis

The question was asked, "Is there anything new in art departments in high schools?" Mr. Johnson said that in Burris School they have tried to set up an art unit in which art and the crafts and home arts and all phases of art education are in one big unit. The children go to the particular field in which they are interested. They have a studio with normal-size windows, where they have the advantage of having cardboard walls for mural work. The question of having a studio designed like a professional studio was discussed. Mr. Sullivan believed that this should be done because, as in other departments, an atmosphere should be created which would make the work more interesting for the pupil.

Mr. Schwarz, who teaches mechanical drawing to V-12 classes, stated that not more than five per cent of the students he has taught during the past five semesters have any knowledge of "plain, ordinary, down-to-earth drawing." He believes that art can be, and should be, developed as easily as writing or reading. He pointed out that, instead of dropping art after the first few grades, it should be taught within other subjects by the teachers. He stated that the basic principles of art are really lost, and there is more theory than practice.

Mr. Sullivan pointed out the importance of art, if for no other reason than to teach color harmony. He related examples of poor color scheming. Mr. Schwarz gave an example along this line of a school whose home economics department was ruined because of the inability of the sewing teacher to recognize good color harmony.

Mr. Johnson brought up the point that after the war there will be a large number of men and women who will have a lot of time on their hands, and that provisions will have to be made for them. He stated that they are already planning on this in his school. He also stated that there are a great many mothers interested in pottery. Many have also bought looms and are weaving rugs.

At this point the conversation drifted to finance, and it occupied the remainder of the session.

ADULT EDUCATION

Discussion Leaders:

H. L. Smith, Dean of School of Education, Indiana University
Ralph Watson, Business Manager, Indiana State Teachers College
C. E. Hamilton, Architect, Muncie

Dean Smith requested Mr. C. E. Hamilton, an architect from Muncie, Indiana, to open the discussion on adult education.

Mr. Hamilton: The subject of adult education is one in which we are more or less experimenting rather than having actual figures on which to base the discussion. The design and arrangements in the physical plant should reverberate back to the curriculum that will be offered, which, in this case, is adult education. With the curriculum to be offered in mind, the architect will design the facilities for such a plant.

Dean Smith then asked for suggestions from the group.

Dean Smith: You have touched upon the two problems of adult education: (1) its program, and (2) the facilities for implementing that.

Mr. Watson then spoke as follows on the general planning of the facilities for adult education.

Mr. Watson: There are three or four questions that we are of necessity going to have to answer:

1. What is the whole purpose of adult education?
2. Who are these adults going to be?
3. What are we going to teach them and how are we going to teach them?

In trying to thing through the first question, we are going to have a tendency to think of it as vocational education, which is undoubtedly important; however, we should also consider the broader phases of general education and parent education.

Also answering the questions as to who will be taught adult education, I should say that we will have the returning veteran; the 4 F's; we will have those who dropped out of their formal education due to the high salaries being paid in industry or due to patriotic motives. We should do something about this in the postwar period.

Where will we teach them in our present setup? We will take them where we find them, where they quit when they were inducted, whether in the public schools, the secondary schools, or the colleges and universities.

Who is going to teach them? Those who are in the teaching business. We are going to expand our present facilities. Coming back to the building and maintenance of operation we will have to utilize all of the educational facilities which we have used in our regular educational setup, especially in the secondary school. It will be necessary to have some expansion, especially in part-time evening classes, and in radio, visual education, recreation, and some other departments. In planning, we should consider expansion and utilization of the present facilities.

In some communities that will mean the construction of gymnasiums for something more than basketball. They will in the future be used for physical rehabilitation in the physical education setup. These gymnasiums will be very useful for the handicapped returning veterans who are either physically or mentally handicapped or both.

Mr. Watson: We will have to get away from the idea of closing the schoolhouses at four o'clock promptly. Evening schools will come more than ever into their own. I think the evening school should be staffed as nearly as possible with the same staff that we use in the day school. California has been one of the outstanding states in carrying on evening schools. Milwaukee is one city that has done a good job. This idea can be carried on in the postwar period.

Floor: One of our problems is going to hinge largely on the way the community handles this situation after the war. It includes not only the returning veteran, it also includes many of the people who are now in war work. They are going to want to be retrained or have refresher courses. We must be as cooperative as possible. The saddest thing is for a veteran to return and have to roam around. There should be an established center where we can sift out and direct these people. If we have such a center then our adult education program will be more successful.

Floor: Each community should meet its own problem and not attempt to standardize the education. We must offer what the desire and needs are.

Floor: The offerings will be limited by the amount of federal support available. If we don't get sufficient federal aid, we will be greatly curtailed.

Mr. Hamilton: The government will continue as much as it is doing in its present form.

Floor: To what extent will the army or the federal government desire to continue an educational program after the war?

Dean Smith: That is a critical controversial point at the present time. Educators do not want it and it appears as if the Army does want it. We had the same problem after the last war. Now this problem is in the foreground. This time the future of education in the country will be largely determined by the decision that is made now. The school people throughout the country are meeting and banding together to try to have influence in this area. It looks now as if the management of the program for veterans will be under the Veterans' Administration, but that existing educational institutions will be used; however, time will answer the question of whether the educational program is to be determined by the educators of by the Veterans' Administration.

The history of this whole movement suggests other areas that may be tapped in the future. It was during the last war that we got the conception of re-education of the people who were disabled in the armed forces, but we were not then ready to re-educate the regular citizens who had become disabled in industry. Later, however, provisions were made for the retraining of citizens disabled in industry. Following this war, we will be faced with the problem of people who were thrown out

of employment because their old occupations were gone. This applies to laborers who had gone from a higher level of living back to a lower level. They are disabled just the same as the physically disabled. Society has abandoned their particular line of work, and society will have to see that point of view. It is therefore feasible to expand adult education to allow an individual shift from an old occupation to a new one by offering some refresher work.

Mr. Hamilton: We have already done this in the war to a certain extent. Will this not continue after the war?

Mrs. Smith: In the last war there was training only for 24 different occupations, and in this war training is offered for 323 occupations in one country alone—England. That same principle would operate in normal times in reconversion.

Floor: To what extent will the labor unions themselves want to participate in this program, and to what extent will they want to control re-education of their members is a question.

Dean Smith: Yes, that is going to be a problem. We have with us a person who is personally familiar with these situations concerning the labor unions, Mr. Dillon, and I think we should like to hear from him now.

Mr. Dillon: We have one fear in any community—the relief agency. We are attempting now to revitalize adult education by tying it to the rehabilitation of the returning veterans. If adult education in any community has too much of the rehabilitation of returning veterans as its justification for existence, there will be a great danger. Members of the labor group feel themselves in need today of more vocational training, but they are not sure that the public school can give them help. The school administrator will have to convince them that he can give them help without dictating to them as to what union policy should be followed.

During this summer we have had two groups of labor people on our campus—the A. F. of L. and the U.A.W.-C.I.O., who came here to learn how to work together on educational problems and to get leadership training. The ordinary trade union members do not claim that they are educated and they are not interested in taking on that additional worry but they are not willing to turn it over to persons who are not sympathetic in their policies. They fear that the schoolman knows one side of the picture but does not know their side of the problem. There is a suspicion there. However, in some communities that fear is disappearing. Today they are ready to accept any kind of a leadership the public school can offer, but they will hold back until they are convinced that the school is ready to help them without attempting to reorganize or remake their point of view.

Floor: The vocational group thinks that there are many undiscovered possibilities in the education of advisory committees. We

allowed our School Board to be our advisory committee, when in reality they are an administrative committee. There is a need for an advisory committee to the School Board.

Mr. Dillon: Some of the unions in Detroit are beginning to believe that, in setting up an educational program for this group, they will have to discover natural leaders. Instead of selecting a certain person as a leader, they are starting with a natural leader who has been picked by a group of 15 or 20 instead of an arbitrary leader. That is a different approach from trying to pick a man and make him a leader. This method is getting surprising results. The school leaders must be conversant with this new approach. The labor groups are perfectly willing to serve the public schools more but are naturally suspicious.

All organized groups just the same as the school groups were fearful of the G.I. Bill because they didn't know how it was going to operate. The trade union groups were against it and, until they see that it is going to contribute to their interests, they will continue to be against it. During the war training program a lot of union groups have accepted school training planning. We are making for the first time an analysis of the employable possibilities of the membership in some of the unions in Indiana. For the first time labor groups are seeing vocational training as something that contributes to the life of their organization. The attitudes that the labor groups have held are the logical results of neglect on the part of education. We have made some definite gains in establishing more healthy relationships. They will accept vocational training more as they trust the people that are running it.

Floor: The attitude is now good and can be molded permanently by sympathetic leaders.

Mr. Borgerson: Michigan has a $250,000 appropriation for adult education. From this war we hope to come out with more trained industrial workers than ever in this country. We are directing our adult education along general and recreational lines rather than along vocational lines. We have over 250,000 people who are not citizens of our own country; 400,000 who can hardly read and write.

Mr. O. F. Moore of Iowa: As you know, Iowa is largely an agricultural state. Adult education has centered around agricultural interests. Industry is beginning to come in, but so far adult education programs have largely been directed from the Iowa State Agricultural College. Following the war there will be adult courses aimed to improve the social aspects of living rather than confined to agricultural interest.

Dean Smith: During the depression, when a number of people were unemployed, it is a fact that the schools acted more or less as an employment agency This fact is not generally considered in educational literature.

Mrs. Smith: The British adult education program is based on the interests of the people who are going to be educated. They

are asked what they want, and that is a good way to begin. Since the war started in Great Britain there has been a great increase in the number of short-term courses for adults. Fifty-seven per cent of those were concerned with social science: 28 per cent with literature and art. This trend towards general educational rather than purely vocational courses is a pattern that may be followed in this country.

SPEECH AND DRAMATICS

Discussion Leaders:

O. P. Larson, Assistant Professor of Speech, Indiana University
Mildred Wirt, Auditorium Supervisor, Gary Public Schools
John Leonard Hamilton, Architect and Planner of School Buildings, Chicago

The Chairman stated that, since different equipment is needed in the various levels in speech and dramatics, he would like an expression of the desire of the group as to whether public speaking, dramatics, radio, or speech correction should be discussed in this meeting.

It was decided to begin with the discussion of public speaking and dramatics, which have more to do with the design of the room and the equipment than does any other phase.

Architect Hamilton stated that the auditorium has grown in the past few years from a small, third-floor room equipped with a floating platform to an auditorium with a balcony and a good stage with all the appurtenances of a theater. This costs quite a bit of money; and Mr. Hamilton wondered how well that money is invested and how often it is used to advantage in the school in training for University work. He said he would like to know how dramatics courses are being organized. With splendid scenery and a full stage, it gets into money. For whom should this money be spent?

Mrs. Wirt stated that in her opinion it should not be used just for the few but for all of the people in a democracy. She advocated the use of the school auditorium all day long, just as one would use a chemistry laboratory. The auditorium should be used for a part of the community needs, and the cost of the building and equipment does not necessarily indicate the value or suitability for the community.

Mr. Hamilton told of a high school in Iowa City (not the University high school) where they developed their music department very highly and went to considerable expense to provide a place for their programs. Their auditorium seats 1,200, and they have a Little Theater seating about 200. For experimental purposes, a Little Theater is a very desirable feature.

He also told of the scheme used at Richmond—where they built a gymnasium with a stage. Some difference of opinion existed as to its suitability for use as an auditorium, but on the whole it was very satisfactory. It has to be a sort of compromise between an

auditorium and a gymnasium, and is not altogether satisfactory for either.

Another description was of a Memorial Hall built of a workable size. Up to date that has worked very well. The large room can be subdivided by the use of curtains when necessary. This does not look very well, but answers certain purposes.

Mr. Hamilton called attention to criticisms heard in the use of gymnasiums in Indiana, where the audience has to go across so much floor space to get to their seats when the building also serves as an auditorium.

Mr. Larson presented for discussion the question of equipment backstage—the lighting equipment in particular.

Mr. Hamilton brought out the fact that modern electrical switchboards cost a lot of money, that the minimum expense would be from $3,500 or $4,000 up to $50,000.

The Chairman asked whether or not many of the $3,500 outfits were in use and were satisfactory.

Mrs. Wirt said that the smaller schools buy these outfits sometimes. But the chief thing these schools need is flexibility. The very expensive outfits often mean wasted money. Good results can be obtained with moderate expense. Emphasis should be on spots and floods. The footlight is nearly out. It may be used to advantage if it has three colors. Portable lights may be so placed that one row strikes six feet behind the acting curtain and two feet inside the proscenium curtain. So many times the very expensive boards are not what are needed.

The question of the method of control of the lighting systems was discussed, and all agreed that some sort of switchboard should be planned for, even when there was a very inexpensive system of lighting used. A desirable arrangement is to have five or six switches and teach the youngsters to operate them; to have a few variations, such as floods and different colored effects, for a small auditorium where the funds are limited.

Another topic that was discussed was the height of the stage and the relative measurements for the opening of the proscenium and the stage.

Mrs. Wirt stated that the height of the stage should be about 3 feet, 9 inches, and the opening of the proscenium should be half of the stage space—e.g., 30-foot stage and 15-foot proscenium opening. She said that we will have to educate teachers, ourselves (auditorium supervisors), the architects, and the community all along in order to secure a better understanding between these groups. Plans could be made for better acoustics, the proper slope of floors, and stage equipment and lighting.

Mr. Larson asked for opinions on the location for dressing rooms.

Mrs. Wirt recommended that they be adjacent to the stage, or above the stage, but said it is not often possible to have this arrangement. Usually the dressing rooms are across the hall from the stage, or farther away.

Architect Hamilton described the arrangement of a building

at Richmond. They were limited to about $50,000. They had no stage shop and no custume room. These should be adjacent to the stage. The dressing rooms were across the corridor.

Mrs. Wirt stated that the people should know what to ask for and should try to get space for showers and dressing rooms properly located, inasmuch as the usual building is supposed to last for about 50 years. The administrators should consult the people who are going to use the rooms, then talk with the architect.

A good woodshop man can build many of the things needed on the stage.

Mrs. Wirt said that even though most architects will say that no apron is needed, she thinks there should be a tiny apron.

Architect Hamilton told of a very large high school building in Kansas City which has a very fine auditorium, with everything that belongs to it. Adjoining the stage is a shop; it has a grid-iron and counterbalancing scenery; the proscenium opening is about 40 feet wide and the stage is about 100 feet wide. He said, "We were inclined to lower the stage slightly to promote visibility." They put hardwood panel in the middle of the stage floor and softwood flooring around it—in order to have a good foundation for a dance program when needed. The softwood used was Douglas fir.

Interesting points were discussed in regard to the difficulties encountered with fire marshals in reference to municipal and state ordinances. For instance in Richmond, even though the little theater seated only about 125, the fire marshal forced them to make ramps. The group felt that school theaters should not be in the same class as commercial theaters although, when the main room in the building is a theater, it might be classed as a theater and not a school building.

Favorable comment was made on the installation of the Hammond organ. The expense is not too great and it answers the purpose very well.

Mr. Hamilton described the setup at the University of Iowa, where they have a revolving stage, with shop adjoining on one side, and a platform on tracks that can be run right in on the stage level. The audience room is of plain acoustical plaster. He said he thought that beauty and color are necessary in planning for high school theaters. There should be no hanging fixtures for lighting a theater auditorium. The lamps should all be concealed, giving indirect lighting.

Mrs. Wirt brought up the subject of whether or not there should be windows in a school theater.

It was the general opinion that not many people like rooms without windows; that the windows can be satisfactorily darkened when necessary; also the room may be used for other purposes than as a theater. If a room is to be used as a theater only, the walls should be finished about 35 per cent dark.

The schools at Gary were said to be exceptionally well-equipped with auditoriums and equipment. Favorable mention was also made of the Newcastle, Hartford City, and Muncie schools.

Mr. Larson asked for discussion on the use of the classroom—whether the ordinary classroom could be made more adaptable for courses in public speaking and for small programs.

It was agreed that this could be done with very simple equipment. Flood lights are not necessary, and a small platform or movable stage is very satisfactory. Mr. Hamilton said that he had seen instances where a stage two feet high was astonishingly effective.

The Chairman stated that in the teaching of public speaking it is not desirable to have much formality; that all of their classrooms in these courses are three floors above the recording room. It is arranged so that a light can be switched on when they are ready for a recording.

Mrs. Wirt expressed the opinion that plans should be made for the use of radio and television. She advocated the recording of a pupil's work in the first grade, second grade, and so on, and suggested that the children and their parents be allowed to hear these recordings at frequent intervals in order to appreciate the progress made. She thinks there are wonderful possibilities for both teacher and pupil, through recordings, to watch progress.

Mention was made of some excellent performances which had been put on in study halls and similar rooms with very little equipment. But Mrs. Wirt called attention to the fact that, while good performances can be put on with little equipment, that is no reason for keeping good equipment away from the schools if such can be obtained.

Architect Hamilton stated that, when a new auditorium is to be built for use by a large high school, it is well to plan for a seating capacity of 2,000 to 2,200 for the large room, and to have another auditorium seating 500 to 600 people. It is not advisable to have too large an auditorium for high schools.

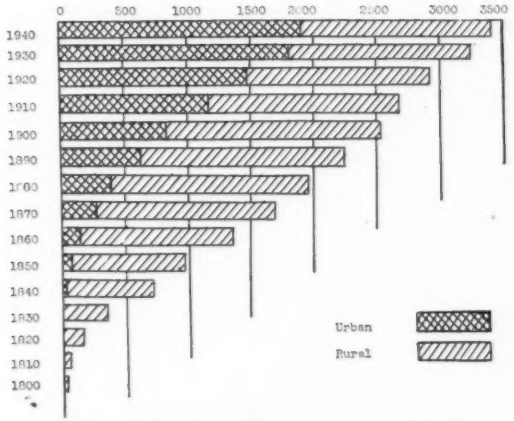
Trends in School Enrollment and Population in Indiana

by

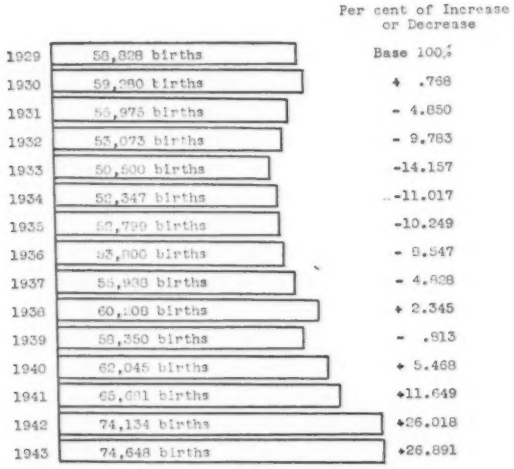
GERHARDT AHRENS

THE problem of population is as old as the race itself. We read in both sacred and profane history about population trends. To understand the problems of school enrollment and population one must consider the problems of birth increase and birth decrease or birth control. The children of one set of parents vary from none to 24 or 25. The problem of school enrollments and population is tied up very closely with the question of food supply. All records show that when we have an abundance of food the birth rate goes up, and in times of depression the birth rate goes down. At the present time the trend in school enrollment is up.

Coming a little nearer to our own day, you have before you a paper entitled, "Total Number and Per Cent of Increase or Decrease in Births in Indiana from 1929 to 1943, Inclusive." Let us look at the chart rather closely. We find that in using 1929 as a base, the year of the close of the so-called prosperity and the year of the beginning of the so-called depression, these years indicate very clearly and re-emphasize certain facts which have prevailed in every century, past and gone, and among all peoples. You will note that the year 1930 had a small increase of 7 to .06 per cent. You will notice a decrease in every year down to 1940, with the exception of



Urban and rural population of Indiana in thousands: 1800-1940



Total number and per cent of increase or decrease in births in Indiana, 1929-1943

1938. The reason for the increase in 1938 was due to an apparent flurry of prosperity in 1937, when prices went up from 11 to 23 per cent. By 1940 it was apparent to all thinking people that we would be plunged into war. Activities of all kinds were on the increase. One need only to look at the newspapers and magazines and to study the financial charts to see the tremendous upsurge at the time. That, in turn, reflected itself in increase in birth rates, so that by 1943 we had an increase of 26.89 per cent of population over 1929.

With an increase of more than 25 per cent in population we are going to need more than 25 per cent increase in teachers if our schools have just the curriculum they had in 1929. However, the curriculum of 1929 has been considerably expanded. More specialized courses, more special attention to health, and other subjects have increased the need of the number of teachers very materially over 1929.

We may expect this trend to continue during the war and for a number of years after the war. That means giving consideration to the number of teachers needed, to the number of buildings needed, and to the amount of supplies and equipment needed. Since the depression years school enrollments are steadily climbing and we must plan to meet this future need.

POPULATION OF INDIANA, 1800-1940

Census year	Population	Increase in population over preceding census		Per cent of urban and rural population	
		Number	Per cent	Urban	Rural
1940	3,427,796	189,293	5.8	55.1	44.9
1930	3,238,503	308,113	10.5	55.5	44.5
1920	2,930,390	229,514	8.5	50.6	49.4
1910	2,700,876	184,414	7.3	42.4	57.6
1900	2,516,462	324,058	14.8	34.3	65.7
1890	2,192,404	214,103	10.8	26.9	73.1
1880	1,978,301	297,664	17.7	19.5	80.5
1870	1,680,637	330,209	24.5	14.7	85.3
1860	1,350,428	362,012	36.6	8.6	91.4
1850	988,416	302,550	44.1	4.5	95.5
1840	685,866	342,835	99.9	1.6	98.4
1830	343,031	195,853	133.1		100.0
1820	147,178	122,658	500.2		100.0
1810	24,520	18,879	334.7		100.0
1800	5,641				100.0

Panel on Problems in Planning, Constructing, and Financing School Buildings in Cities and Towns

SUMMARY ON PANEL

by

HAROLD H. CHURCH

THE Indiana School Building Planning Committee was appointed by Dr. Clement T. Malan, State Superintendent of Public Instruction. Its purpose is threefold:

1. To determine Indiana school building needs.
2. To focus attention of local school administrators on educational planning.
3. To act as a clearinghouse for suggestions on planning and legislation for the postwar period.

The committee has had four meetings and feels that the following musts should be included in any effective postwar planning in Indiana:

1. A representative of the State Department of Education, a specialist in schoolhouse planning appointed by the State Director of Education, should be included as a member of the State Administrative Building Council. He should be clothed with authority to approve all state school building plans.
2. New buildings should be planned.
   a. To serve as a community center.
   b. To provide for more opportunity for adult education.
   c. To provide greater service in health care, health education, and recreation.
   d. To provide for a wider use of plant facilities in shops and laboratories, visual and audio-education, counselling and guidance, and laboratories and auditoriums.

Implications of survey of school building planning in Indiana towns and cities are:

A total of 179 questionnaires (a copy of which follows) were sent out by the State Department; only 134 were returned; 45 were not returned. The survey reveals the following trends and conditions:

1. 93 are planning for specific postwar building needs.
2. 76 have planning committees.
3. 84 claim that their buildings are inadequate; 41 say that they are adequate.
4. 73 have retained architects; 35 have not.
5. 52 have plans drawn; 25 have not.
6. 75 say that federal aid will alter their plans; 35 say not.
7. A summary of the estimated cost of school building projects needed follows:

1,043 classrooms at $10,000	$10,430,000.
27 auditoriums, average capacity 1,200, at $105,000	1,835,000.
27 gymnasiums, average capacity 3,000, at $180,000	4,860,000.
46 combination auditorium-gymnasiums, average capacity 500, at $70,000	3,222,000.
Total estimated cost	$20,347,000.

INQUIRY ON ARCHITECTURAL FIRMS

1. Name of architectural organization .....

2. Address .....

3. Names of professional organizations of which the firm is a member:
   a) National .....
   b) State or local .....

4. Architectural education and experience of the first two men in the organization.
   a) First man in the organization: Name.....
      Training ..... Institution .....
      Degree ..... Time attended .....

      Experience (If experience has been gained in other architectural offices, give here names of offices and length of service.)

   b) Second man in the organization: Name .....
      Training ..... Institution .....
      Degree ..... Time attended .....

      Experience (See note under "a")

5. How long has your firm been engaged in the architectural profession?
   .....

6. If you were engaged for architectural service who would act as superintendent of construction? .....
   What are his training and experience? .....
   .....

7. Personnel of your present permanent organization:

	Names of each	How many of each
a) Registered architects	.....	.....
b) Architectural designers	.....	.....
c) Designers	.....	.....
d) Draftsmen	.....	.....
e) Superintendent of construction	.....	.....
f) Specification men	.....	.....
g) Mechanical engineers	.....	.....
h) Clerical help	.....	.....

8. Do you do your own *structural engineering?* .....
   If not, give the name of the firm which would participate in the proposed planning .....
   Do you do your own *mechanical engineering?* .....
   If not, give the name of the firm which would participate in the proposed planning .....
   Do you do your own *electrical engineering?* .....
   If not, give the name of the firm which would participate in the proposed planning .....

9. List below all the buildings you have designed and the construction of which you have supervised during the past ten years.

(a) Name of building	(b) Date of Construction	(c) Location of building	(d) Cost of building

10. What was the total volume of business handled by your organization during the past ten years? $.....

11. If you wish, state below any other qualifications of yourself and your organization which especially qualify you as architects.

Date..... Filled out by.....

Besides furnishing an estimate on the public school building needs of cities and towns in Indiana, the questionnaire has focused the attention of local administrators in boards of education upon postwar school building planning and legislation. Unfortunately, some communities are delaying too long in planning their programs.

ADVANTAGES OF COOPERATIVE SELF-SURVEY

by

OTTO HUGHES

Upon the recommendation of the superintendent, the Board of Education of the city of Columbus, Indiana, agreed to have a survey made of the Columbus city schools. The superintendent was authorized to secure professional assistance. The Indiana University School of Education was decided upon as the institution to invite to participate.

After a conference of Dean H. L. Smith of the School of Education of Indiana University, his advisory staff, and the superintendent of the Columbus schools, Dean Smith appointed Mr. Harold E. Moore as director of the survey.

A meeting was held with Mr. Moore and the Board of Education at Columbus, at which time an outline of the procedures was decided upon. Panels in the various fields were chosen. These panels were comprised of individuals from the Columbus school system who were best qualified to give an accurate cross section of the work as it had been and is at present being carried on. On each panel, also, were specialists from Indiana University and from such other institutions of learning as were designated by Mr. Moore. The State Department of Education also participated by sharing membership on each panel.

Each panel made a study of the work that is being done in Columbus. This study was made through personal visitations, testing, and personal conferences. The members of the panels made a report of the findings to Mr. Moore and set forth certain conclusions and recommendations. These findings will be carefully considered by the superintendent and Mr. Moore, who in turn will make a report to the Board of Education for their consideration.

This cooperative study has not been completed to date, but much value has been derived already. Not the least of the benefits is the general widespread interest shown by each member of the Columbus personnel in being privileged to study his own contributions and make recommendations for general improvement.

LEGISLATION WHICH WILL PROVE HELPFUL DURING THE POSTWAR PERIOD

by

M. C. DARNALL

Fields in which legislation will prove helpful in the school building program after the war:

1. Authority to establish a sinking fund for building purposes.
2. A reassessment of real estate during 1945.
3. Granting of state funds for local emergency adult postwar rehabilitation.
4. Authorization for the granting of tuition funds from the state treasury for pupils in the 13th and 14th grades.
5. Establishment of division of school planning in the State Department of Education.
6. Abolishment of the statute requiring the consent of the Common Council for bond levies for school buildings.
7. The mandating of a building program by the state authorities.

THE FIRST STEP IN PLANNING THE EDUCATIONAL SURVEY

by

AARON LINDLEY

We have heard a number of times in this conference how essential it is for the architect to get all of the practical information about a building before he starts to make preliminary drawings.

The educational survey should have a central committee to draw up a statement of philosophy, including aims and purposes of the local school system. There should be subcommittees to survey present practices in outstanding schools, review the literature written by authorities in the field, and present a recommended report to the Central Committee of the survey staff.

Committees such as the following will be helpful:

1. School Organization Committee. This committee should decide the best pattern of school organization, 6-3-3, or 8-4, or some other;

annual or semi-annual promotions; whether elementary grades should be departmentalized or in a self-contained room; whether the high school course of study should be single or multitract plan, etc.

2. Record and Grade Committee. What should a cumulative record contain? How will the progress of the child be reported to the parent, that is, will a percentage or letter system of grading be used?

3. Test and Measurement Committee. What types of tests are to be given, diagnostic, achievement, aptitude, etc.? What uses will be made of tests, etc.?

4. Guidance Committee. This committee should survey and recommend whether counselors, home-room teachers, etc. should be appointed on the school staff. What will be the duties and responsibilities of such recommended positions?

5. Course and Subject Matter Committee. Committees in English, social studies, mathematics and science, commerce, etc. should be organized.

The above suggested committees are not intended as complete but are suggestive of the types of subcommittees that should be formed. Parents and local community leaders have a place on the committees.

Certainly a 6-3-3 and a 6-6 type of organization would require different types of buildings. Once the aims, objectives, and philosophy of the school are determined, functional planning can begin.

REHABILITATION IN THE POSTWAR PERIOD

by

HARRY MOURER

There are three classes of people who must enter into the picture of postwar rehabilitation. First of all is the discharged soldier. Nearly all of our planning has been for the veteran, but there are two other classes we must not fail to consider.

Second, there are those who are now regularly employed, both men and women, who have good jobs and good pay by virtue of the fact that a place was made for them because some man went into the service. Organized labor has requested that these men be considered.

Third, there are the boys and girls who have quit school on or near their sixteenth birthday, and who now are making more money and perhaps spending more money than their fathers did four years ago. The problems which may evolve from this latter group when thrown out of employment stagger the imagination. We must remember that John Dillinger and all of the other gangs who terrorized society some years ago were not products of the first World War. They were the social dregs of postwar negligence.

Here we, as school administrators, must do some real planning. The NYA of the future (if there is an NYA) should be a part of the local school program. Perhaps the compulsory school age limit should be raised to 18 years or more. In any event, our schools must be prepared to give these boys and girls all types of vocational

training which will adjust their lives to the new technology and which will enable them to find their proper places in a new industrial world.

Perhaps most women will be satisfied to give up their wartime economic independence and return to the problems of homemaking. When the army demobilizes, wartime majors and colonels go back to their peacetime rank of sergeants. Likewise, as industry goes on a peacetime basis, and discharged soldiers find their way back to their jobs, plant superintendents will again become workers on the machine.

We have heard it said that office boys and time checkers in civilian life who have found themselves in the army and have become high ranking officers will never return to their old jobs. It is just as true that some industrial workers have proved themselves fitted for positions of responsibility and trust, which they will continue to fill.

The great majority of veterans under 24 years of age, who left school just before entering the service, will desire additional school training. All of the vocational and professional resources of the schools should be open to these men. These resources will vary with the community. Adjacent school communities must combine their planning and their offerings. Area vocational schools should be spotted in appropriate centers. If the school is not brought to the men, the men must be brought to the school.

Panel on Problems in Planning, Constructing, and Financing School Buildings in the Rural and Semirural Areas

SUMMARY OF THE REPLIES OF COUNTY SUPERINTENDENTS FOR INDIANA SCHOOL BUILDING PLANNING SURVEY

by

IRA HUNTINGTON

THE following summary of replies should not be considered as an accurate statement of the school building needs in the counties of Indiana. Only 39 counties returned the questionnaires. Some of these were so poorly done, their usefulness was negligible. The survey does have value, however, in that it presents a general picture of the status of the planning which is being done by local school communities and gives the approximate costs contemplated by counties in Indiana. One of the principal values of this survey is the stimulation it has offered local superintendents and Boards of Education to plan for the postwar period. This increased awareness of school building needs should tend toward better building situations.

SUMMARY OF THE REPLIES FOR COUNTIES

	Definite planning for postwar period by counties	Additional construction probable if substantial financial aid were given	Construction needed if educationally desirable consolidation were effected
Classrooms	179 in 18 counties	354 in 25 counties	554 in 26 counties
Gymnasiums	10 in 8 counties	53 in 22 counties	60 in 21 counties
Other	22 in 12 counties	17 in 8 counties	47 in 15 counties
Estimated costs*	$2,754,000	$7,454,000	$10,304,000

* Classrooms, $10,000; gymnasiums, with capacity of 500, $70,000; others, $12,000.

LEGAL PROBLEMS AND PROCEDURES IN A BUILDING PROGRAM

by

ARTHUR H. HINES

It is not to be assumed that these notes on legal procedure in schoolhouse construction are complete. However, most of the items have been passed upon by the courts as being the law.

As a preliminary step to postwar construction programs, we need to have our school laws re-codified. We have so many laws

still on the statute books that have had certain of their sections repealed by the passage of newer laws and which usually wind up by saying, "All laws and parts of laws in conflict with the provisions of this act are hereby repealed," that the real law can only be decided in court. Since school officials are not the judges of the parts of laws that are in conflict, it behooves us to employ competent legal advice. But laws are effective only when something has been or is being done. All the good laws possible would not get us a building until someone proceeds to act.

We should not wait till accident or calamity prods us into activity, but should act on intelligent conclusions made by careful study of the community needs.

Why not have laws applicable to present conditions presented to the legislators of the coming session of the general assembly?

We need a law giving power to the state department of education to formulate a building code and enforce conformity thereto.

We need to eliminate some of the "mays" and the "and ors" in our present laws wherein the word "shall" should occur.

We should have such laws as necessary to cause high schools of senior high school standing to offer courses of study as needed to give the pupils therein an opportunity to study not *a* science, but *the* sciences, worth-while physical training courses, vocational work, and business law.

The state department should be allowed to improve the method of credits earned in school to the end that credits would depend on knowledge of and not on time spent on a given course.

Some of the suggestions may not be apropos to the subject I was to discuss, but if such changes could inspire a new interest in education, new building programs would be demanded and the need for long drawn-out efforts on the part of school officials to get a new building would become unnecessary.

ADVANTAGES OF FURTHER CONSOLIDATION OF SCHOOLS IN INDIANA

by
FRED HAYES

The advantages listed below of further consolidation of schools in Indiana are based upon the following assumptions:

1. That there are suitable transportational facilities available.
2. That the proposed consolidated schools offer adequate building space.
3. That the move for consolidation has been made with the idea of economy and educational improvement, and not by a gerrymandering effort to benefit one school corporation at the expense of another.

Of the many claimed benefits derived from consolidation of school districts, ten are deemed of greatest importance. They are:

1. Greater economy and efficiency in administration.

2. Broader instructional offering and more teaching time per class per week.
3. Better educational achievement.
4. Reduction in the variation in local tax burdens.
5. Cheaper per capita cost.
6. Increased school attendance.
7. Reduction in the number of teachers.
8. Better training and experience, and longer tenure of teachers.
9. Better age-grade distribution.
10. Better offering of programs indigenous to the communities served.

FINANCIAL PLANNING

by

HARVEY POLING

All finance, and particularly school building finance, should be based on a solid financial foundation. Under the present Indiana law this basis is local property tax. Therefore the limitations are fixed by the relationship between numbers of pupils and assessed evaluation, or, in other words, the amount of property wealth behind each child. This, of course, leaves out of account any grants of the state or national government.

Due to the wide differences in different parts of the state in regard to property wealth per child capita, it is impossible at the present time to execute acceptable minimum building programs.

Some type of financial aid other than, or in addition to, property assessment is badly needed. This might take the form of outright grants by state or federal government. It might take the form of an advancement of money by the state amortized over a long period and retired as an operating and maintenance cost.

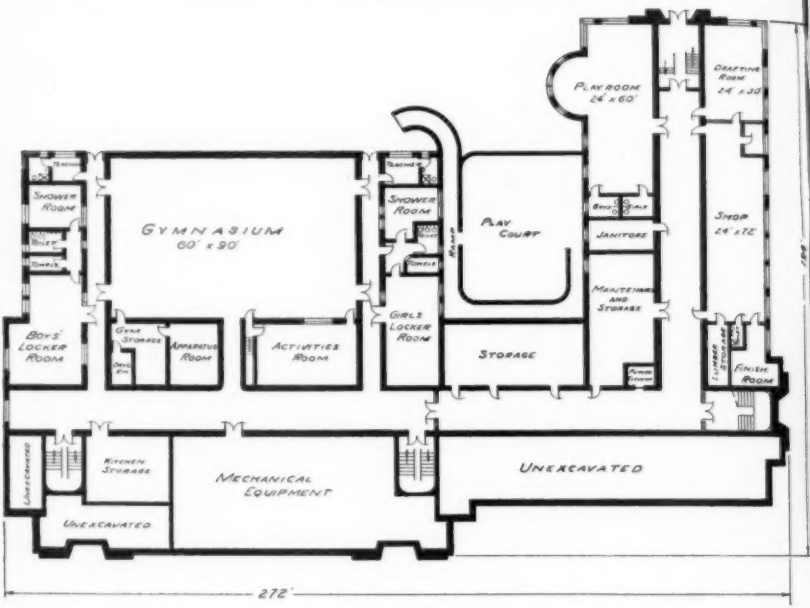
Each community presents its individual problems with its own peculiarities, and each must be guided in the light of its need and ability. A survey of need carried out by competent educational experts should precede all planning. This survey should indicate what is most urgently needed and should further indicate a sound, long-time program. The financial ability of the community will dictate the speed with which the execution can be accomplished. It is well to keep in mind that it is dangerous to plan or attempt more spending than can be financed.

University School, Bloomington, Indiana, with Floor Plans

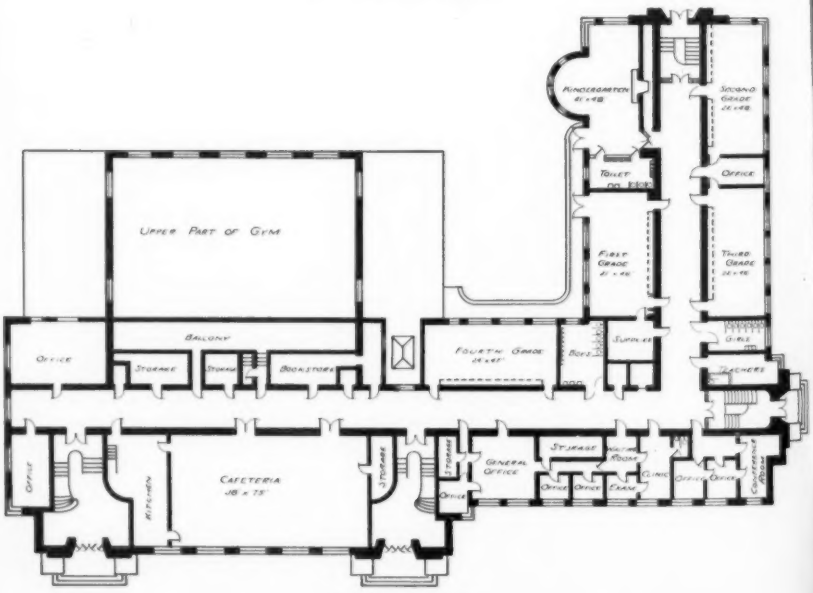
MANY persons who attended the conference on "Planning Post-war School Buildings" showed great interest in the University School building, both because of its practical features and up-to-dateness and because of its beauty, and a number of them requested floor plans of the building. Since copies of these plans were not available at the time, they have been included here for those who are interested.

The school plant is modern in every respect. The building is designed to house a complete school unit, from the nursery school through the twelfth grade. It will accommodate approximately 750 pupils and 250 student teachers from the University who do their observing and their supervised teaching at the school. It is organized on the 6-6 plan.

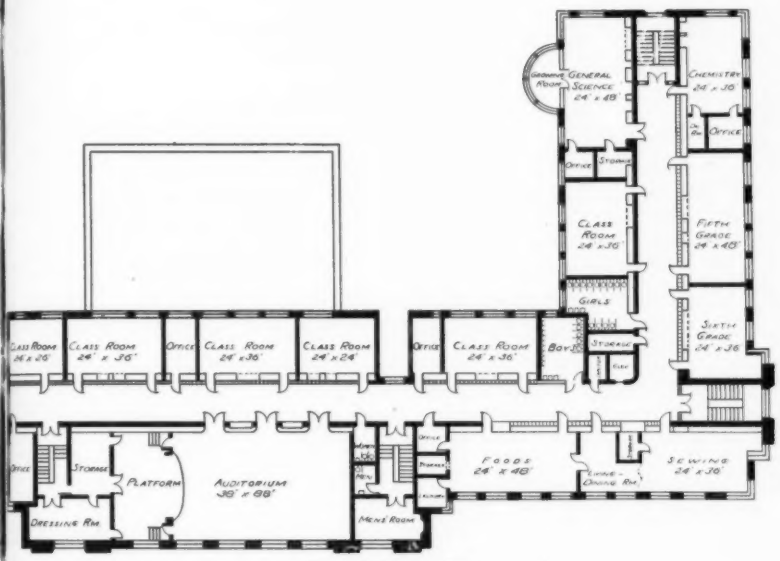
View of the University School from the campus



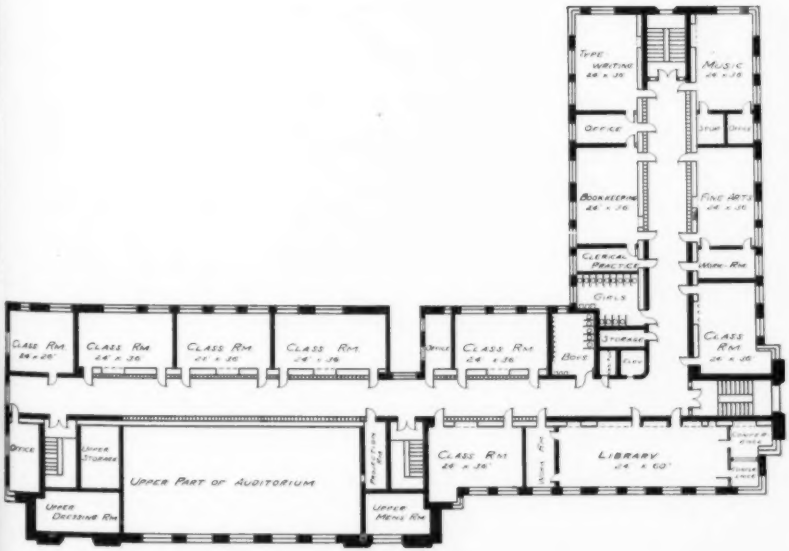
Basement floor plan



First floor plan



Second floor plan



Third floor plan

A List of Bulletins in the Field of Education, Indiana University

By Kathleen Dugdale

The School of Education at Indiana University has published the following bulletins. All of these may be obtained from the University Bookstore for 50 cents postpaid unless otherwise noted.

Proceedings of the High School Principals' Conference (November 23 and 24, 1923). Vol. I, No. 1, 1924. 85 p. (Supply exhausted.)

Investigation of Nursing as a Professional Opportunity for Girls, Part I, Technical Study; Part II, Vocational Information Bulletin. By Florence E. Blazier. Vol. I, No. 2, 1924. 69 p.

Proceedings of the Eleventh Conference on Educational Measurements. Vol. I, No. 3, 1925. 141 p.

Proceedings of the High School Principals' Conference (November 14 and 15, 1924). Vol. I, No. 4, 1925. 49 p. (Supply exhausted.)

First Revision of the Bibliography of Educational Measurements. Compiled by the Bureau of Cooperative Research. Vol. I, No. 5, 1925. 147 p. (Supply exhausted.)

Proceedings of the Twelfth Conference on Educational Measurements. Vol. I, No. 6, 1925. 76 p.

The Effect of Population upon Ability to Support Education. By Harold F. Clark. Vol. II, No. 1, 1925. 28 p.

Proceedings of the High School Principals' Conference (November 20 and 21, 1925). Vol. II, No. 2, 1925. 77 p. (Supply exhausted.)

A Cross-Indexed Bibliography on School Budgets. By Harold F. Clark. Vol. II, No. 3, 1926. 66 p.

A Comparison of the Results Made on Certain Standardized Tests by Pupils in the Bloomington High School Who Were Taught in Classes of the Same Grade by University Student Teachers and by Regular High School Teachers. By Carl G. F. Franzén. Vol. II, No. 4, 1926. 19 p.

Proceedings of the Thirteenth Annual Conference on Educational Measurements. Vol. II, No. 5, 1926. 103 p.

When to Issue School Bonds. By Harold Florian Clark and Paul Royalty. Vol. II, No. 6, 1926. 16 p.

Students' Attitude Toward Examinations. By Grover T. Somers. Vol. III, No. 1, 1926. 48 p.

Proceedings of the High School Principals' Conference (November 12 and 13, 1926). Vol. III, No. 2, 1926. 27 p.

Index Numbers in School Administration. By Harold F. Clark. Vol. III, No. 3, 1927. 35 p.

Topical Analysis of 234 School Surveys. Compiled by the Bureau of Cooperative Research. Vol. III, No. 4, 1927. 111 p. (Supply exhausted.)

Proceedings of the Fourth Annual Conference on Elementary Supervision. Vol. III, No. 5, 1927. 64 p.

Proceedings of the Fourteenth Annual Conference on Educational Measurements. Vol. III, No. 6, 1927. 66 p.

Some Phases of the Junior College Movement. By I. Owen Foster, Harold F. Clark, Willard W. Patty, and Leo M. Chamberlain. Vol. IV, No. 1, 1927. 125 p. (Supply exhausted.)

Second Revision of the Bibliography of Educational Measurements. By Henry Lester Smith and Wendell William Wright. Vol. IV, No. 2, 1927. 251 p. (75¢)

Bibliography of School Buildings, Grounds, and Equipment, Part I. By Henry Lester Smith and Leo Martin Chamberlain. Vol. IV, No. 3, 1928. 326 p. (75¢)

Proceedings of the High School Principals' Conference (November 18 and 19, 1927). Vol. IV, No. 4, 1928. 54 p.

The Economic Effects of Education. By Harold F. Clark. Vol. IV, No. 5, 1928. 39 p.

Proceedings of the Fifteenth Annual Conference on Educational Measurements. Vol. IV, No. 6, 1928. 73 p.

Proceedings of the Fifth Annual Conference on Elementary Supervision. Vol. V, No. 1, 1928. 54 p.

Proceedings of the High School Principals' Conference (November 16 and 17, 1928). Vol. V, No. 2, 1928. 33 p.

The Development and Use of a Composite Achievement Test. By Wendell William Wright. Vol. V, No. 3, 1929. 90 p.

An Analysis of the Attitudes of American Educators and Others Toward a Program of Education for World Friendship and Understanding. By Henry Lester Smith and Leo Martin Chamberlain. Vol. V, No. 4, 1929. 109 p.

Tentative Program for Teaching World Friendship and Understanding in Teacher Training Institutions and in Public Schools for Children Who Range from Six to Fourteen Years of Age. By Henry Lester Smith and Sherman Gideon Crayton. Vol. V, No. 5, 1929. 54 p.

Proceedings of the Sixteenth Annual Conference on Educational Measurements. Vol. V, No. 6, 1929. 96 p.

Proceedings of the Sixth Annual Conference on Elementary Supervision. Vol. VI, No. 1, 1929. 73 p.

An Analysis of the Duties of County School Superintendents and Superintendents of Schools in Certain Cities in Indiana. By Henry Lester Smith and Leo Martin Chamberlain. Vol. VI, No. 2, 1929. 94 p.

Proceedings of the High School Principals' Conference (November 22 and 23, 1929). Vol. VI, No. 3, 1930. 51 p.

Cooperative Studies in Secondary Education. By Henry Lester Smith and Carl G. F. Franzén. Vol. VI, No. 4, 1930. 121 p.

Proceedings of the Seventeenth Annual Conference on Educational Measurements. Vol. VI, No. 5, 1930. 103 p.

Proceedings of the Seventh Annual Conference on Elementary Supervision. Vol. VI, No. 6, 1930. 102 p.

A Study in Teacher Supply and Demand in Indiana. By I. Owen Foster, Robert K. Devricks, Harry N. Fitch, Earl C. Bowman, and George L. Roberts. Vol. VII, No. 1, 1930. 77 p.

Proceedings of the High School Principals' Conference (November 7 and 8, 1930). Vol. VII, No. 2, 1930. 70 p.

The Philosophy of Human Relations: Individual and Collective—A Source Book. By Henry Lester Smith and Harold Littell. Vol. VII, No. 3, 1931. 326 p. (75¢)

The Psychology of Human Relationships: Individual and Social—A Source Book. By Henry Lester Smith and Levi McKinley Krueger. Vol. VII, No. 4, 1931. 107 p.

Proceedings of the Eighteenth Annual Conference on Educational Measurements. Vol. VII, No. 5, 1931. 83 p.

Efficiency in College Management. By John Dale Russell. Vol. VII, No. 6, 1931. 143 p.

Bibliography of School Surveys and of References on School Surveys. By Henry Lester Smith and Edgar Alvin O'Dell. Vol. VIII, Nos. 1 and 2, 1931. 212 p. (75¢)

Proceedings of the Nineteenth Annual Conference on Educational Measurements. Vol. IX, No. 1, 1932. 139 p.

Bibliography of School Buildings, Grounds, and Equipment—Part II. By Henry Lester Smith and Forest Ruby Noffsinger. Vol. IX, No. 2, 1933. 182 p.

Bibliography of School Buildings, Grounds, and Equipment—Part III. By Henry Lester Smith and Forest Ruby Noffsinger. Vol. IX, No. 3, 1933. 130 p.

A Brief Summary of Literature on Leadership. By Henry Lester Smith and Levi McKinley Krueger. Vol. IX, No. 4, 1933. 80 p.

Proceedings of the Twentieth Annual Conference on Educational Measurements. Vol. X, No. 1, 1933. 98 p.

Bibliography of College and University Buildings, Grounds, and Equipment. By Henry Lester Smith and Forest Ruby Noffsinger. Vol. X, No. 2, 1934. 199 p. (75¢)

Factors Affecting the Organization of School Attendance Units. By Raleigh Warren Holmstedt. Vol. X, No. 3, 1934. 32 p.

The Old World Historical Background of Religious and Moral Education in Schools. By Henry Lester Smith, Robert Stewart McElhinney, and George Renwick Steele. Vol. X, No. 4, 1934. 144 p.

Proceedings of the Twenty-first Annual Conference on Educational Measurements. Vol. XI, No. 1, 1934. 96 p.

Bibliography of School Buildings, Grounds, and Equipment—Part IV. By Henry Lester Smith and Forest Ruby Noffsinger. Vol. XI, No. 2, 1935. 216 p.

A Brief Survey of Present-Day Religious and Moral Education in the Schools of Countries Other Than the United States of America. By Henry Lester Smith, Robert Stewart McElhinney, and George Renwick Steele. Vol. XI, No. 3, 1935. 185 p.

Some Practical Efforts to Teach Good Will. By Henry Lester Smith and Peyton Henry Canary. Vol. XI, No. 4, 1935. 169 p.

Proceedings of the Twenty-second Annual Conference on Educational Measurements. Vol. XII, No. 1, 1935. 97 p.

A Basis for the Improvement of Education in Rural Monroe County, Indiana. By Henry Lester Smith and Forest Ruby Noffsinger. Vol. XII, No. 2, 1936. 168 p.

Reading Readiness—A Prognostic Study. By Wendell William Wright. Vol. XII, No. 3, 1936. 46 p.

Proceedings of the Twenty-third Annual Conference on Educational Measurements. Vol. XII, No. 4, 1936. 60 p.

Bibliography of Literature on the Teaching of English. By Henry Lester Smith and William Isaac Painter. Vol. XIII, No. 1, 1936. 299 p.

Bibliography of Literature on Education in Countries Other Than the United States of America. By Henry Lester Smith and William Isaac Painter. Vol. XIII, No. 2, 1937. 341 p. (75¢)

Character Development Through Religious and Moral Education in the Public Schools of the United States. By Henry Lester Smith, Robert Stewart McElhinney, and George Renwick Steele. Vol. XIII, No. 3, 1937. 137 p.

Proceedings of the Twenty-fourth Annual Conference on Educational Measurements. Vol. XIII, No. 4, 1937. 100 p.

Bibliography of Literature on Education in Countries Other Than the United States of America (January 1, 1919, to December 31, 1924). By Henry Lester Smith and William Isaac Painter. Vol. XIV, No. 1, 1937. 139 p.

Two Studies in Education. By Henry Lester Smith and Merrill Thomas Eaton. Vol. XIV, No. 2, 1938. 42 p.

Bibliography of School Surveys and of References on School Surveys (Supplement to Vol. VIII, Nos. 1 and 2). By Henry Lester Smith and Edgar Alvin O'Dell. Vol. XIV, No. 3, 1938. 144 p. (75¢)

Proceedings of the Twenty-fifth Annual Conference on Educational Measurements. Vol. XIV, No. 4, 1938. 37 p.

Remedial Instruction in Reading with College Freshmen. By Nila Banton Smith. Vol. XV, No. 1, 1938. 35 p.

Two Studies in Arithmetic. By Henry Lester Smith and Merrill Thomas Eaton. Vol. XV, No. 2, 1939. 91 p.

The Relation of Retention to Speed of Learning. By Henry Lester Smith and Merrill T. Eaton. Vol. XV, No. 3, 1939. 105 p.

Proceedings of the Twenty-sixth Annual Conference on Educational Measurements. Vol. XV, No. 4, 1939. 53 p.

An Experimental Study of Standards for the Selection of Candidates for Teacher-Training Institutions. By Henry Lester Smith and Merrill Thomas Eaton. Vol. XVI, No. 1, 1939. 72 p.

State Control of Public School Finance. By Raleigh Warren Holmstedt. Vol. XVI, No. 2, 1940. 71 p.

Teacher Tenure in Indiana and the Courts. By Henry Lester Smith and R. Foster Scott. Vol. XVI, No. 3, 1940. 81 p.

Twenty-seventh Annual Conference on Educational Measurements. Vol. XVI, No. 4, 1940. 37 p.

A Study of the English Usage, Spelling, and Vocabulary of 251 Graduate Students at Indiana University. By Henry Lester Smith and Merrill T. Eaton. Vol. XVI, No. 5, 1940. 71 p.

The Teaching of Arithmetic to Low-Ability Students in the Elementary Schools. By Henry Lester Smith and Merrill T. Eaton. Vol. XVI, No. 6, 1940. 130 p.

An Analysis of the Achievement of 164 Sophomores Enrolled in Teacher-Training Courses at Indiana University. By Henry Lester Smith and Merrill T. Eaton. Vol. XVII, No. 1, 1941. 31 p.

The Scholastic Achievement of Athletes at Indiana University. By Henry Lester Smith and Merrill T. Eaton. Vol. XVII, No. 2, 1941. 16 p.

Twenty-eighth Annual Conference on Educational Measurements. Vol. XVII, No. 3, 1941. 42 p.

Legal Relations of Pupils and Parents to the Public Schools of Indiana—Part I. By Henry Lester Smith and R. Foster Scott. Vol. XVII, No. 4, 1941. 81 p.

Legal Relations of Pupils and Parents to the Public Schools of Indiana—Part II. By Henry Lester Smith and R. Foster Scott. Vol. XVII, No. 5, 1941. 72 p.

A Study of Students Transferring from Indiana University. By Merrill T. Eaton. Vol. XVII, No. 6, 1941. 26 p.

An Analysis of Arithmetic Textbooks (First Period—1790-1820). By Henry Lester Smith and Merrill T. Eaton. Vol. XVIII, No. 1, 1942. 55 p.

Education in Guatemala. By John Espéndez-Navarro and Henry Lester Smith. Vol. XVIII, No. 2, 1942. 96 p.

A Study of Indiana University Withdrawals. By Merrill Thomas Eaton. Vol. XVIII, No. 3, 1942. 20 p.

Education in Mexico. By Henry Lester Smith. Vol. XVIII, No. 4, 1942. 95 p.

Twenty-ninth Annual Conference on Educational Measurements, and *A Study of the Achievement of Freshman Students Holding County Scholarships.* By Merrill T. Eaton. Vol. XVIII, No. 5, 1942. 57 p.

An Analysis of Arithmetic Textbooks (Second Period—1821 to 1850, and Third Period—1851 to 1880). By Henry Lester Smith and Merrill Thomas Eaton. Vol. XVIII, No. 6, 1942. 112 p.

World War Information. By Margaret I. Rufsvold. Vol. XIX, No. 1, 1943. 129 p.

A Measure of Motor Fitness for College Men. By Karl W. Bookwalter and Carolyn W. Bookwalter. Vol. XIX, No. 2, 1943. 26 p.

A Study of Students Transferring to Indiana University from Other Colleges and Universities. By Merrill T. Eaton. Vol. XIX, No. 3, 1943. 39 p.

An Analysis of Arithmetic Textbooks (Fourth Period—1881 to 1910). By Henry Lester Smith and Merrill Thomas Eaton. Vol. XIX, No. 4, 1943. 62 p.

Further Studies of Indiana University Motor Fitness Index. By Karl W. Bookwalter. Vol. XIX, No. 5, 1943. 48 p.

An Analysis of Arithmetic Textbooks (Fifth Period—1911 to 1940). By Henry Lester Smith and Merrill Thomas Eaton Vol. XIX, No. 6, 1943. 45 p.

An Analytical Study of January-February (1943) Entering Freshmen at Indiana University. By William H. Fox. Vol. XX, No. 1, 1944. 50 p.

A Survey of the Achievement in Arithmetic of 11,348 Sixth Grade Pupils in 486 Schools in Indiana. By Merrill T. Eaton. Vol. XX, No. 2, 1944. 66 p.

A Survey of the Achievement in Social Studies of 10,220 Sixth Grade Pupils in 464 Schools in Indiana. By Merrill T. Eaton. Vol. XX, No. 3, 1944. 68 p.

Directory of Educational Research Agencies in the United States. By Henry Lester Smith. Vol. XX, No. 4, 1944. 24 p.

The Teacher Situation in Indiana. Vol. XX, No. 5, 1944. 38 p.

Planning Postwar School Buildings: Proceedings. Vol. XX, No. 6, 1944. 119 p.